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**THE PRODUCTION AND COMPREHENSION OF PLURAL MORPHOLOGY IN
CHILD L2 ENGLISH**

MASTER OF ARTS THESIS

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APPROVAL PAGE

This is to certify that the thesis entitled “**The Production and Comprehension of Plural Morphology in Child L2 English** (İngilizce’yi İkinci Dil Olarak Öğrenen Çocuklarda Çoğul Morfolojisinin Üretimi ve Anlaşılması)” prepared by Asli Sena Buvan (Student ID: 2018116002) submitted in fulfilment of the requirement for the degree of Master of Arts in Foreign Language Education complies with the regulation of the Izmir Democracy University, Institute of Social Sciences and meets the accepted standards with respect to originality.

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ACADEMIC ETHICS STATEMENT

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ÖZET

İngilizce’yi İkinci Dil Olarak Öğrenen Çocuklarda Çoğul Morfolojisinin Üretimi ve Anlaşılması

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Eylül, 2023, 123 sayfa

Çocukların ikinci dili nasıl edindikleri sorusu eğitim alanındaki pek çok araştırmacı tarafından incelenmiştir (örn. Paradis, 2011; DeKeyser, 2012). Bu çalışma, İngilizce’yi ikinci dil olarak öğrenen Türk çocukların İngilizcedeki çoğul işareti –s’yi anlama ve üretme biçimlerini incelemeyi amaçlamaktadır. Bu sayede çalışma, çoğul morfolojinin akustik analizler yoluyla anlaşılması ve üretilmesinin ikinci dil öğrenen Türk çocuklar ile çalışılmamış olması sebebiyle mevcut literatüre katkıda bulunmaktadır. Bu tezin teorik çerçevesi morfoloji üretimindeki farklılıkları öngören Çekim Ekinin Görünüş Eksikliği Hipotezi’dir (ÇEGEH). Hipotez, bir çekim morfeminin kullanılmaması, aşırı kullanımı ve çeşitliliği şeklinde gözlemlenen değişkenliğin, büyük ölçüde soyut kategorileri yüzey morfofonolojik formlarıyla eşleştirmenin zorluğuyla bağlantılı olduğunu iddia eder (Prévost & White, 2000) ve üretim ve anlamada bir asimetri öngörür (White, 2008). Bu amaçla, taklit etme, üretme ve anlama olmak üzere üç göreve dayalı deneysel bir çalışma tasarlanmıştır. Çalışma, İngilizce çoğul eki –s için, [s], [z] ve [əz] olarak üç allomorf içermiştir ve katılımcıların tekil /z/, küme /ks/ ve hecesel /əz/ olarak çoğul koda türlerinin üretimlerini incelemiştir. Çalışma grubu, 2021-2022 bahar döneminde Türkiye’deki özel bir okulun iki ilkokul sınıfındaki 30 birinci sınıf öğrencisinden (yaş ortalaması 7;3) oluşmaktadır ve katılımcılar uygun örneklem yoluyla seçilmiştir. İlk olarak, taklit etme görevinde katılımcılara slayt gösterisinde resimler gösterilmiştir ve her slayttaki görselle eşleşen ses kaydını duydukları şekilde tekrarlamaları istenmiştir. İkinci görev olan üretim görevi, çocuğun tekil bir ögenin ve birden fazla ögenin görselini betimleyen bilgi kartlarında gösterilen kelimelerin çoğul hallerini üretmesini gerektirmiştir. Anlama görevinde katılımcılara bir slayt gösterisinde iki alternatif zorunlu seçenekle (2AFC) fonetik odaklı

yeni kelimeler sunulmuştur. Her çocuk yeni bir ismin yer aldığı bir cümle duymuş ve slaytlarda sunulan iki resimden birini işaret etmiştir. İki uzman Praat (Boersma ve Weenink, 2023) kullanıcısı, her koda türü için akustik kodlama gerçekleştirmiş ve yanlış yanıtlar için hata türünü (kullanmama veya değiştirme) belirlemiştir. Tanımlayıcı ve çıkarımsal istatistiksel sonuçlar, öğeler, koşullar ve görevler genelinde doğruluk ve yanlışlık oranları karşılaştırılarak rapor edilmiştir. Araştırmanın başında katılımcıların daha fazla ihmal hatası yapacakları öngörülse de çalışmanın sonuçları, ortaya çıkan taklit görevinde değiştirme hata tipinin daha yaygın olduğunu göstermiştir. Ancak ortaya çıkan üretim görevinde katılımcılar çoğul ekini genellikle düşürmüşlerdir. Koda türü açısından araştırma sonuçları, katılımcıların çoğul kelimelerdeki koda kümelerindeki segmental kodalarda daha fazla zorluk yaşadıklarını ortaya koymuştur. Katılımcılar hece kodasını başarılı bir şekilde üretmeseler de anlama görevinde hece kodasında başarılı olmuşlardır. Araştırma sonuçları ışığında, Türkçe konuşan çocukların ikinci dil çoğul çekim morfolojisinin gramer ve sözcüksel yapısını anlayıp kullanabilmeleri için hedef dile uzun süre maruz kalmaları gerekebileceği önerilmiştir.

Anahtar sözcükler: Çocuk dili, çoğul morfoloji, Çekim Ekinin Görünüş Eksikliği Hipotezi, fonolojik karmaşıklık, İngilizce, Türkçe.

ABSTRACT

The Production and Comprehension of Plural Morphology in Child L2 English

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The question of how children acquire a second language has been studied by the researchers in education (e.g., Paradis, 2011; DeKeyser, 2012). This study aims at examining the way Turkish child learners of English as a second language comprehend and produce the plural marker –s in English which poses difficulty to L2 learners due to its phonological and morphosyntactic difference in terms of the inflectional morphology features. The present study contributes to the existing literature in the sense that the comprehension and production of plural morphology through acoustic analyses has not been studied in the interlanguage of Turkish child L2 learners. The theoretical framework that this thesis relies on is the Missing Surface Inflection Hypothesis (MSIH) which claims that observed variability in the form of omissions, overuse and commissions of an inflectional morpheme is highly linked to the difficulty in mapping abstract categories to the surface forms (Prévost & White, 2000) and predicts an asymmetry in the production and comprehension of function morphemes (White, 2008). For this purpose, an experimental study based on three tasks, namely elicited imitation, elicited production, and comprehension was designed. The stimuli included three allomorphs of the plural marker –s, [s], [z] and [əz], and examined the participants' productions of plural coda types as singleton /z/, cluster /ks/, and syllabic /əz/. The study group was comprised of 30 children (mean age 7;3) from two first-grade elementary school classrooms in a private school in Turkey during the 2021-2022 spring semester. In the elicited imitation task, the participants were shown pictures on a slide show and were asked to repeat the audio recording that matched the image on each slide in the way they heard them. The second task, the elicited production task, required the child to produce the plural forms of the words shown on flashcards that demonstrated the visual of a singular item and multiple items. In the comprehension task, the participants were presented phonetically focused novel words with two alternative forced choices (2AFC) on a slideshow. Each child heard a sentence with a novel noun and pointed at one of the two pictures presented on the

slides. Two expert Praat (Boersma & Weenink, 2023) users conducted acoustic coding. Descriptive and inferential statistical results were reported by comparing accuracy and inaccuracy rates across items, conditions, and tasks. Although it was predicted at the beginning of the study that participants would make more omission errors, the results of the study showed that substitution error type was more common in the elicited imitation task. However, in the elicited production task, participants made more omission errors. In terms of the coda type, the research results presented that the participants had more difficulty in the segmental codas than in the coda clusters in plural words. Although they could not produce the syllabic coda successfully, they did well in the syllabic coda in the comprehension task. In light with the research results, it was suggested that Turkish speaking children may be exposed to the target language for an extended time to be able to understand and use the grammatical and lexical structure of the plural inflectional morphology in a second language.

Keywords: Child language, English, The Missing Surface Inflectional Hypothesis, Turkish, phonological complexity, plural morphology.

TABLE OF CONTENTS

APPROVAL PAGE.....	ii
ACADEMIC ETHICS STATEMENT.....	iii
ACKNOWLEDGEMENTS.....	iv
ÖZET.....	v
ABSTRACT.....	vii
TABLE OF CONTENTS.....	ix
LIST OF FIGURES.....	xii
LIST OF TABLES.....	xiii
CHAPTER 1. INTRODUCTION.....	1
1.1. Background of the Study.....	1
1.2. Purpose of the Study.....	3
1.3. Significance of the Study.....	4
1.4. Statement of the Problem.....	5
1.5. Assumptions of the Study.....	9
1.6. Definitions of the Terms.....	9
1.7. Abbreviations of the Terms.....	12
1.8. Conclusion.....	13
CHAPTER 2. PLURAL MARKING IN ENGLISH AND TURKISH.....	14
2.1. Introduction.....	14
2.2. Plural Marking in English and Turkish.....	14
2.2.1. The Allomorphs of the Plural Marker.....	14
2.2.2. Irregularities of Plural Marker.....	15
2.2.3. Plural Marking on Compounds.....	16
2.2.4. Countability and Plural Marking.....	17
2.2.5. The Pluralisation of Adjectives.....	20
2.2.6. The Plural Marker in Wishes and Abstract Concepts.....	20
2.2.7. The Plural Marker in Dates and Places.....	21
2.2.8. The Plural Marker with Proper Nouns.....	22
2.2.9. The Plural Marker as Means to Resolve Ambiguity.....	22
2.3. Conclusion.....	23

CHAPTER 3. LITERATURE REVIEW.....	25
3.1. Introduction.....	25
3.2. Functional Categories in Second Language Acquisition: Full or Partial Access to UG?	26
3.2.1. The Feature Assembly Hypothesis.....	29
3.2.2. The Missing Surface Inflection Hypothesis.....	30
3.3. Acquisition of the Plural Morphology.....	33
3.3.1. First Language Acquisition of Plural Morphology.....	33
3.3.2. Second Language Acquisition of Plural Inflectional Morphology.....	37
3.4. Conclusion.....	43
CHAPTER 4. METHODOLOGY.....	45
4.1. Introduction.....	45
4.2. Design.....	45
4.3. Data Collection Procedures.....	46
4.4. Participants.....	48
4.5. Data Collection Instruments.....	50
4.5.1. Experiment 1: Elicited Imitation Task.....	51
4.5.2. Experiment 2: Elicited Production Task.....	51
4.5.3. Experiment 3: Comprehension Task.....	52
4.5.3.1. Comprehension Task: Condition 1.....	54
4.5.3.2. Comprehension Task: Condition 2.....	55
4.5.3.3. Comprehension Task: Condition 3.....	55
4.6. Research Questions and Predictions.....	56
4.7. Data Coding.....	58
4.7.1. Acoustic Coding.....	58
4.8. Data Analysis.....	64
4.9. Conclusion.....	65
CHAPTER 5. RESULTS.....	66
5.1. Introduction.....	66
5.2. Results for the First Research Question.....	66
5.2.1. Results for Prediction A.....	66
5.2.2. Results for Prediction B.....	67
5.3. Results for the Second Research Question.....	68

5.3.1. Results for Prediction C.....	72
5.3.2. Results for Prediction D.....	72
5.3.3. Results for Prediction E.....	73
5.3.4. Results for Prediction F.....	74
5.3.5. Results for Prediction G.....	75
5.3.6. Results for Prediction H.....	76
5.3.7. Results for Prediction I.....	77
5.4. Results for the Third Research Question.....	78
5.4.1. Results for Prediction J.....	79
5.4.2. Results for Prediction K.....	80
5.4.3. Results for Prediction L.....	80
5.5. Interim Summary.....	80
5.6. Conclusion.....	84
CHAPTER 6. DISCUSSION.....	85
6.1. Introduction.....	85
6.2. The Effect of Phonology on the Production of the L2 Plural Inflectional Morphology.....	85
6.3. The Effect of Phonology on the Comprehension of the L2 Plural Inflectional Morphology.....	88
6.4. The Overall Task Accuracy.....	91
6.5. Conclusion.....	92
CHAPTER 7 . CONCLUSION.....	93
7.1. Summary of the Findings.....	93
7.2 Pedagogical Implications of the Study	94
7.3. Recommendations for Further Research	95
7.4. Limitations.....	97
7.5. Final Remarks.....	97
REFERENCES.....	99
APPENDICES.....	120
APPENDIX A. Ethics Permission (Izmir Democracy University).....	120
APPENDIX B. Demographics Questionnaire in Turkish.....	121
APPENDIX C. Demographics Questionnaire in English.....	122
CURRICULUM VITAE AND LIST OF PUBLICATIONS.....	123

LIST OF FIGURES

Figure 1. <i>A Sample Illustration of the Stimuli Used in the Elicited Production Task.....</i>	52
Figure 2. <i>Sample Illustrations of the Stimuli Used in the Comprehension Task.....</i>	54
Figure 3. <i>The Frication Noise for the Presence of the Singleton Coda /z/, in the Word Rose.....</i>	59
Figure 4. <i>A Sample Production of the Omission Error Type for the Singleton Coda /z/, in the Word Rose.....</i>	59
Figure 5. <i>A Sample Production of the Omission Error Type For The Singleton Coda /z/, in the Word Rose.....</i>	60
Figure 6. <i>The Plosive with Coda Bursts and Frication Noise for the Presence of the Coda Cluster /ks/, in the Word Fox.....</i>	61
Figure 7. <i>A Sample Production of the Omission Error Type for the Coda Cluster /ks/, in the Word Fox.....</i>	61
Figure 8. <i>A Sample Production of the Substitution Error Type for the Coda Cluster /ks/, in the Word Bikes.....</i>	62
Figure 9. <i>The Vowel and Frication Noise Distribution for the Correct Production of the Syllabic Coda /əz/, in the Word Houses.....</i>	62
Figure 10. <i>A Sample Production of the Omission Error Type for the Syllabic /əz/, in the Word Houses.....</i>	63
Figure 11. <i>A Sample Production of the Substitution Error Type for the Syllabic /əz/, in the Word Houses.....</i>	63
Figure 12. <i>The Rates of Accuracy in the Elicited Imitation, Elicited Production, and Comprehension Tasks.....</i>	67
Figure 13. <i>The Error Rates in the Elicited Imitation and Elicited Production Tasks.....</i>	68
Figure 14. <i>The Accuracy Rates in the Elicited Imitation Task.....</i>	69
Figure 15. <i>The Accuracy Rates in the Elicited Production Task.....</i>	70
Figure 16. <i>The Error Rates of the Singleton Coda and Coda Cluster in Singular Words...</i>	71
Figure 17. <i>The Error Rates in the Singleton Coda and Coda Cluster in Plural Words....</i>	72
Figure 18. <i>The Error Rates in Singular and Plural Words Ending with a Coda Cluster...</i>	74
Figure 19. <i>The Error Rates in Singular and Plural Words Ending with a Singleton Coda.</i>	75
Figure 20. <i>The Error Rates in the Singleton and Syllabic Codas in Plural Words.....</i>	76
Figure 21. <i>The Error Rates in the Medial and Final Utterances of the Plural Words.....</i>	77

Figure 22. <i>The Error Rates in the Production of Coda Cluster and Syllabic Coda in Plural Words</i>	78
Figure 23. <i>Accuracy Rates in the Comprehension Task</i>	79



LIST OF TABLES

Table 1. <i>Demographic Characteristics, Language Exposure and Dominance of the Participants</i>	48
Table 2. <i>Educational and Linguistic Background of the Participants' Parents</i>	49
Table 3. <i>Sample Items with Phonetic Transcriptions for the Elicited Production Task</i> ..	52
Table 4. <i>Sample Items with Phonetic Transcriptions for The Comprehension Task Condition 1</i>	54
Table 5. <i>Sample Items with Phonetic Transcriptions for the Comprehension Task Condition 2</i>	55
Table 6. <i>Sample Items with Phonetic Transcriptions for the Comprehension Task Condition 3</i>	55
Table 7. <i>A Comparison of Monolingual and Bilingual Children on the Same Tasks</i>	81

CHAPTER 1. INTRODUCTION

This chapter presents the outline of the thesis under six subsections. The first section includes the background of the study, followed by the statement of the problem, the purpose, and the significance of the study in the literature. The following sections outline the research questions and the assumptions of the study. The chapter ends with the definitions and the abbreviations of terms in the last subsection.

1.1 Background of the study

The question of how children acquire a second language has undeniably become the subject of research in education (e.g., Paradis, 2011; DeKeyser, 2012). More specifically, the kind of processes (Lightbown & Spada, 1993; Muñoz, 2014), acquisitional paths children follow (García Mayo & García Lecumberri, 2003; Jia & Fuse, 2007) and variability they manifest (Muñoz, 2008; Nikolov & Mihaljević Djigunović, 2006; Paradis, Rusk, Duncan, & Govindarajan, 2017) while acquiring morphophonologically distinct languages has attracted attention within the last two decades (Berman, 2014; Koda, 2005; McCauley & Christiansen, 2019; Van Dijk, Dijkstra, & Unsworth, 2022). Thus, an in-depth investigation of how children acquire a second language will contribute to our understanding of typical developmental paths in childhood bilingualism.

The scope of this thesis is determined by the phonological and morphological differences across languages in acquiring functional morphology, which may constitute difficulty in second language acquisition (SLA). More specifically, the aim is to explore the variability in the comprehension and production of plural marking by children learning English as a second language (L2). In the process of acquiring past tense morphology in a second language, language-internal variability is observed in the form of omissions, commissions, and overuse (Ellis, 2006, 2008). For instance, learners omit the plural morpheme, as in “I hear it so many *time*” (Lardiere, 2007: 116) and “I have two *cousin*” (Lardiere, 2007: 186) substitute the morpheme by committing an error of commission as in “The cats *is* in the box” (Green, McCutchen, Schwiebert, Quinlan, Eva-Wood, & Juelis, 2003: 761) or overuse the morpheme as in “*one books*” or “*childrens*” (Li & Yang, 2022: 4). These forms of variability are widely cited in the literature with multiple theories. This thesis adopts the Universal Grammar Generative Framework which relies on two widely acknowledged theoretical approaches, the Feature-Reassembly Hypothesis (FRH) (Lardiere,

2005, 2008, 2009) and the Missing Surface Inflection Hypothesis (MSIH) (Haznedar & Schwartz, 1997; Prévost & White, 2000; Sundquist, 2005) to account for such variability in the learner interlanguage.

FRH claims that L2 learners whose L1 is morphologically distinct from the L2 they are acquiring improve their morphological knowledge by reassembling the patterns they initially learned in their first language to the corresponding morphological forms in the second language (Lardiere, 2017). The assumption is that second language acquisition occurs native-like as long as the learner reassembles the features of their mother tongue into the novel functional classification in the L2 (Lardiere, 2005, 2008, 2009).

In a similar vein, MSIH claims that observed variability in the form of omissions, overuse and commissions of an inflectional morpheme is highly linked to the difficulty in mapping abstract categories to the surface morphophonological forms (Prévost & White, 2000) and predicts an asymmetry in the production and comprehension of function morphemes (White, 2008). That is, the variability the learner manifests is mostly restricted to the production of functional morphology. What is more, variability in the form of errors of omission and commission in the inflectional morphology cannot be affiliated with a failure to represent the functional features (Gardner, Branigan, & Chondrogianni, 2021) since both accounts assume that the L2 learners have full access to the principles and parameters of the Universal Grammar (UG) and the abstract categories from the first language.

With respect to plural marking, if the issue is linked to the difficulty in mapping abstract categories onto surface forms, the vowel and consonant distribution in languages under discussion, Turkish and English, in this case, needs to be considered from a phonological perspective. This configuration is important since it dictates the way functional morphology is produced. Vowels, in general, are cited to be acquired before the age of three and earlier than consonants (Nojavan-Pirehyousefan, Zarifian, Ahmadi, & Pascoe, 2022). The acquisition of consonants may take longer depending on the phonotactics of the two languages and possible transfer effects between the languages. To illustrate, English allows consonant clusters both in the beginning (e.g., strike /*straɪk*/) and at the end of the word (e.g., text /*tekst*/). Furthermore, two-thirds of the nouns in English have consonant clusters in the word-final position. This holds the bigger portion compared to word-initial consonant clusters (Locke, & Studdert-Kennedy, 1983). Languages such as Turkish, on the other hand, have fewer consonant clusters than English and do not allow word-initial consonant clusters.

A maximum of two consonants may come together in some of the loanwords most of the time (Topbas & Kopkalli-Yavuz, 2008). In this regard, it can be stated that while English has a larger number of consonant clusters placed initially and finally in words, Turkish, depending highly on the loanwords, accommodates consonant clusters only in restricted phonological environments.

From a morphosyntactic perspective, English accommodates noun inflections on number and genitive cases only. However, Turkish inflectional morphology consists of a broader range of noun inflections, including number, possession, five cases¹, namely accusative, dative, locative, ablative, and genitive, and Turkish makes use of a large variety of suffixes in its unique inflectional morphology (Sebüktekin, 2017). Therefore, taking the phonological and morphological differences into account, Turkish learners of English as an L2 may find it challenging to acquire nominal inflectional morphology since they may fail to match the corresponding forms of L1 inflected nouns onto L2 English in an attempt to adapt to a different morphological pattern. The next section gives the purpose of the study and the adopted theoretical framework.

1.2 Purpose of the Study

This study aims at examining the way Turkish child learners of English as a second language comprehend and produce the plural marker –s in English which poses difficulty to L2 learners due to its phonological and morphosyntactic differences in terms of the inflectional morphology features (Ettlinger & Zapf, 2011; Schlechtweg & Corbett, 2023).

Within the Generative Framework, the theoretical framework that this thesis relies on is the MSIH which predicts fluctuation in the production of functional elements. The assumption is that the absence of inflectional morphology in the learner speech cannot be associated with the lack of matching abstract categories. Although MSIH suggests that mapping and accessing to functional morphology can be problematic, the learners are expected to perform better in comprehension tasks than in production tasks (White, 2008).

With the purpose of having a better understanding of the acquisition of plural morphology in child L2 English, this thesis utilises an experimental design to examine the

¹ In Turkish, the accusative case marker is –(y)I (e.g., *kalemi* ‘the pen (ACC)’); the dative case marker is –(y)A (e.g., *Istanbul’a* ‘to Istanbul’); the locative case marker is –DA (e.g., *Istanbul’da* ‘in Istanbul’); the ablative case marker is –Dan (e.g., *Istanbul’dan* ‘from Istanbul’); the genitive case marker is –(n)In/–Im (e.g., *kitabın* ‘of the book’) (Sebüktekin, 2017).

production and comprehension of L2 English plural inflectional morphophonology by Turkish-English bilingual and bi-literate seven-year-olds across three tasks, namely, elicited imitation, elicited production, and comprehension.

1.3 Significance of the Study

The present study contributes to the existing literature in the sense that the comprehension and production of plural morphology through acoustic analyses has not been studied in the interlanguage of Turkish child L2 learners even though the phenomenon has widely been investigated in bilingual children with different L1 backgrounds such as Chinese, (Jia, 2003), Thai (Ninpanit & Pongpaiboj, 2016), Korean (Kabak & Idsardi, 2007) and Italian (Lepetti, 2012). Therefore, this study attempts to fulfil the gap in the literature by highlighting the morphophonological crosslinguistic effects of Turkish in child L2 English. The study is a carefully designed one in which the children are expected to repeat, produce and comprehend up to 5-syllable sentences that contain pseudo and real words in the singular and plural forms. The use of methodology which utilised sentence level production and comprehension of plural morphology adds up to the very few studies in the literature (Marecka, Wrembel, Otwinowska, Szewczyk, Banasik-Jemielniak, & Wodniecka, 2020; Theodore, Demuth, & Shattuck-Hufnagel, 2012; Xu Rattanasone & Demuth, 2022).

There have been studies focusing on the consonant cluster variations between English and other languages (e.g., Japanese: Jiang, Novokshanova, Masuda, & Wang, 2011; Korean: Lim & Christianson, 2015; Hwang & Lardiere, 2013; Spanish: White, Valenzuela, Kozłowska-Macgregor, & Leung, 2004), yet research in child language is limited in this regard. The limited research on the morphosyntactic development of young learners provides either restricted data with very few study samples or comprehensive data with no control groups that are comprised of monolingual peers (e.g., Prezas, Hodson, & Schommer-Aikins, 2014). Furthermore, some research in the area does not give comprehensive information on the language groups being studied (e.g., Grech & Dodd, 2008).

Studies focusing on bilingual or emergent-bilingual² children's morphological awareness need further research with a focus on different L1 backgrounds. Previous work

² *Emergent bilinguals* are individuals who are learning a second language regardless of the context and improving in the language potentially without a proficiency restriction or comparison by any means (García, 2009).

conducted on children who were at least five years of age (Marecka et al., 2020) and in small groups ranging from five to fifteen in number (Fabiano-Smith & Hoffman, 2018; Goldstein, Fabiano, & Washington, 2005) should be enhanced to young learners with various L1 backgrounds so that the data would enable further and deeper understanding of the morphophonological variability in child language. In this regard, there is a lack of research conducted with emergent bilingual L1 Turkish- L2 English children. Since the two languages differ morphophonologically, further research should contribute greatly to our understanding of variability in child language.

1.4 Statement of the Problem

The problem this study deals with arises from the morphosyntactic and morphophonological differences between the two language pairs, namely Turkish and English. These two languages were chosen to investigate the patterns of variability L2 children would manifest in the course of the acquisition of plural morphology in L2 English.

First, the differences between these two languages need to be elaborated on. To start with, the case markers and plural inflections differ in English and Turkish. Sebüktekin (2017) explains that inflectional morphology occurs on English nouns in merely number and genitive cases to mark plurality and possession of nouns. The difference in the form of inflectional morphology between English and Turkish is remarkable because the equivalents of each type of Turkish inflection coincide with a different form in English.

Second, among the languages that differ from English in terms of linguistic structure is Turkish. Turkish belongs to the Oghuz branch of Turkic languages with an agglutinative language structure (Johanson & Csato, 2021). Turkish performs word extractions and new word productions by adding morphemes one after the other when necessary. English, in contrast, allows fewer inflections than Turkish.

Third, plural inflection occurs in different ways and forms in these two languages. In English, the position of consonants plays a significant role (Radford, Atkinson, Britain, Clahsen, & Spencer, 2009). The plural form of English nouns is effectuated with the use of a plural marker, which is overtly realised as *-s*, *-(e)s* or *-(ie)s*. There are also irregular nouns that are pluralized in distinctive ways (e.g., mice, oxen). The noun is combined with either of the plural markers depending on whether the last letter of the word is a vowel or a consonant. When the word ends with a consonant, the voice it receives determines the spelling and pronunciation of the plural suffix. More precisely, Radford et al. (2009) explain

that the plural suffix *-s* has three allomorphs, [s], [z], and [əz], depending on the phonological adjustments made according to the last letter of the word. The allomorphs [s] and [z] are named segmental allomorphs, and the allomorph [əz] is named a syllabic allomorph. The allomorph [s] is used when the last consonant is voiceless, while the allomorph [z] is seen in words where the last consonant is voiced. The formation of the [əz] allomorph takes place depending on whether the final consonant is phonologically fricative or, on the contrary, affricate. Although most regular nouns are pluralised in this way, the occurrence of segmental allomorphs is observed more frequently than that of the syllabic allomorph. English may require consonant assimilation on a set of nouns, although they are also regular based on the voiced or voiceless feature of the last consonant. The assimilation in the consonant of a final position is performed to facilitate the pronunciation of the sounds that follow. After the formation of a plural noun, the voiceless consonant may turn into a voiced consonant as a result of consonant assimilation.

The words in English can end with singleton coda or coda clusters, and the same coda type may be seen in singular and plural forms. For instance, the singular *rose* /rəʊz/ and the plural *knees* /ni:z/ end with a singleton coda, plural allomorph [z], even though they have a different morphological structure. Similarly, both the singular *fox* /fɒks/ and the plural *ducks* /dʌks/ end with a coda cluster /ks/, but they differ morphologically in terms of number. Therefore, the phonological similarity of the singular and plural noun can be used to examine whether learners can make the morphological distinction between the singular and plural forms regardless of the coda type.

In Turkish, vowels accommodate numerous features that are categorised in terms of frontness, height and roundness (Kabak, 2011). The frontness feature refers to the front (e /e/, i /i/, ö /ø/, ü /y/) and back (a /a/, ı /u/, o /o/, u /u/) vowels and the frontness and backness of the first vowel requires the following vowels to have the same category. That is, a front vowel should be followed by a front vowel, and a back vowel should be followed by a back vowel in a word. The combination of the same category of vowels in a noun is named vowel harmony, and it constitutes a significant importance in the Turkish language since it determines the suffixes for the noun (Göksel & Kerslake, 2004). As one of the suffixes, the plural marker *-lar* in Turkish alters according to the final position vowel in a noun and changes into either of its two allomorphs: [ler] and [lar].

In summary, Turkish and English accommodate distinct rules for pluralisation. While English consonants determine the allomorph and assimilation of the plural marker, Turkish

vowels play a role in shaping the allomorph of the plural marker depending on the vowel of the final position by excluding the consonants of the noun (Göksel & Kerslake, 2004). Therefore, it is challenging for L1 Turkish children to acquire L2 English pluralised forms, and they need to employ a set of adjustments and adaptations in their grammatical knowledge to produce these forms accurately.

After presenting the differences between the two languages with respect to plural morphology, the following research questions and predictions will be examined in the present study:

1. Is there an asymmetry in the rates of accuracy among the imitation, production, and comprehension tasks in the acquisition of L2 plural morphology?
 - a. If there is an asymmetry between the two modes, in other words, if there is a difficulty between form and function mapping, then the children are expected to perform more accurately in the comprehension task than in the imitation and production tasks.
 - b. If there is transfer from the children's L1 to the L2, then the children are predicted to produce more omission errors than substitution errors in the imitation and production tasks.
2. Does phonological complexity determine accuracy in the production of singular and plural morphology by Turkish child L2 learners of English?
 - c. If L2 learners struggle in phonology, the coda cluster /ks/ should be more difficult than the singleton coda /z/. Therefore, the children are expected to be more accurate in their productions of singleton codas (e.g., nose /nəʊz/) than in coda clusters (e.g., fox /fɒks/) in singular words.
 - d. If L2 learners struggle in phonology, the plural words ending with a coda cluster should be more difficult than the words ending with a singleton coda. Therefore, the children are expected to be more accurate in their productions of singleton codas (e.g., bees /bi:z/) than coda clusters (e.g., ducks /dʌks/) in plural words.
 - e. If L2 learners struggle to acquire plural inflectional morphology, the plural words should be more difficult than the singular words ending with a coda cluster. Therefore, the children are expected to be more accurate in their productions of coda clusters (e.g., fox /fɒks/) in singular words than coda clusters (e.g., ducks /dʌks/) in plural words.

- f. If L2 learners struggle to acquire plural inflectional morphology, the plural words should be more difficult than the singular words ending with a singleton coda. Therefore, the children are expected to be more accurate in their productions of singleton codas (e.g., nose /nəʊz/) in singular words than singleton codas (e.g., bees /bi:z/) in plural words.
 - g. If the frequency of the plural morpheme impacts the acquisition of L2 inflectional morphology, the children should produce the plural words ending with singleton codas more easily than the ones ending with the syllabic coda [əz]. Therefore, the children are expected to be more accurate in their productions of singleton plurals (e.g., bees /bi:z/) than syllabic plurals (e.g., horses /ho:əsəz/).
 - h. If the sentence position impacts the production, the production of the plural words placed medially should be more difficult to produce than the ones placed finally. Therefore, the children are predicted to be more accurate in their productions of plural inflections in the sentence-final position (e.g., Smell the *roses*) than in the sentence-medial position (e.g., The *roses* are pink).
 - i. If L2 learners struggle to produce the inflectional morphology, the inflection of the plural words ending with the syllabic allomorph [əz] should be more difficult than the plural words ending with a coda cluster /ks/. Therefore, the children are predicted to perform more accurately in inflecting plurals with a coda cluster (e.g., ducks /dʌks/) than syllabic plurals (e.g., horses /ho:əsəz/).
3. Does phonological complexity determine accuracy in the comprehension of singular and plural morphology by Turkish young child L2 learners of English?
- j. If L2 learners struggle to acquire the plural inflection, the plural novel words should be more difficult to comprehend than the singular novel words in terms of the segmental allomorphs [s] and [z]. Therefore, the children are predicted to be more accurate in their productions of singular novel words (e.g., tep /tep/) than plural novel words ending with a segmental allomorph (e.g., teps /teps/).
 - k. If L2 learners struggle to acquire the plural inflection, the plural novel words should be more difficult to comprehend than the singular novel words in terms of the syllabic allomorph [əz]. The children are predicted to be more accurate in their productions of singular novel words (e.g., giss /gis/) than plural novel words ending with a syllabic allomorph (e.g., gisses /gisəz/).

1. If the frequency of the plural morpheme impacts the acquisition of L2 inflectional morphology, the children should comprehend the plural novel words ending with a segmental allomorph [s], [z] more easily than the ones ending with the syllabic allomorph [əz]. Therefore, the children are predicted to be more accurate in their productions of plural novel words ending with a segmental allomorph (e.g., *teps* /*teps*/) than plural novel words ending with a syllabic allomorph (e.g., *gisses* /*gisəz*/).

1.5 Assumptions of the Study

The assumptions of the present study are listed as follows:

1. The child participants will voluntarily participate in and complete the tasks without any worries or anxiety.
2. The child participants are expected to have more difficulty in the production tasks than in the comprehension task.
3. The child participants are expected to be more accurate in their production and comprehension of L2 English plural morphology in environments that are morphophonologically less complex.
4. The children will be present at school on the days of data collection.
5. The parents and school administration will collaborate with the researcher in case of any emerging necessities in the pursuit of the study.
6. In the data coding process, the coders will have prior training in the software Praat (Boersma & Weenink, 2023), and discrepancies, if there exist any, will be resolved.

1.6 Definitions of the Terms

Ablative case: The case that is used with the ablative case marker *-Dan* in Turkish, and it is used to express a departure (e.g., *mutfaktan* ‘from/out of the kitchen’) (Sebüktekin, 2017).

Accusative case: The case that is used to point to the object in the sentence. Turkish accusative case marker is *-(y)I* (e.g., *kalemi* ‘the pen (ACC)’) (Sebüktekin, 2017).

Affricate: The name given to consonants produced with an air block called plosive and a sound created with a pressure of air through the mouth. The affricates in English and Turkish are the same as follows: [tʃ] and [dʒ] (Roach, 2000; Zimmer & Orgun, 1999).

Allomorph: The variations in the pronunciation of the morphemes in words. In English inflectional morphology, the plural marker *-s* possesses three allomorphs which are

categorised as segmental [s], [z] and syllabic [əz] (Davies, Xu Rattanasone, Schembri, & Demuth, 2019).

Auxiliary verb: An element in grammar that supports the main verb in the sentence to create functional meaning or emphasis (Anderson, 2006).

Back vowel: A classification of sounds in languages that are produced by placing the highest point of the tongue partially back in the mouth (e.g. a /a/, ı /u/, o /o/, u /u/) (Kabak, 2011).

Bilingual: A person who can communicate in more than one language, regardless of the non-linguistic aspects, with speakers of other languages (Maftoon & Shakibafar, 2011).

Coda: The name given to the final part of the word. It can be comprised of a single (singleton coda) or more consonants (coda cluster) (Zamuner, Gerken, & Hammond, 2005).

Comitative/instrumental marker: An inflectional marker that is the contraction of *ile* ‘with/by means of’ in Turkish. It can appear as a comitative marker, as in *Emre’yle* ‘with Emre’ or as an instrumental marker *fırçayla* ‘with a brush’ (Sebüktekin, 2017).

Continuity Hypothesis: Children can demonstrate some features of the second language even though their first language lacks them (Pinker, 1984; Thornton, 2008).

Dative case: The case that is used with the dative case marker *-(y)A* in Turkish and that is used to point to the indirect object (e.g., *Kutuyu anneme verdim* ‘I gave the box to my mother’) and the destination (e.g., *Istanbul’a* ‘to Istanbul’) (Sebüktekin, 2017).

Determiner: A word that clarifies and introduces what the noun or the noun phrase refers to (Leech, 2006).

Feature Reassembly Hypothesis: L2 learners whose L1 is morphologically distinct from the L2 they are acquiring improve their morphological knowledge by reassembling the patterns they initially learned in their first language to the corresponding morphological forms in the second language (Lardiere, 2017).

Front vowel: A classification of sounds in languages that are produced by placing the highest point of the tongue toward to front of the mouth (e.g., e /e/, i /i/, ö /ø/, ü /y/) (Kabak, 2011).

Fricative: The name given to consonants articulated with the use of air forcefully in the mouth. Nine fricative consonants in English are [s], [z], [f], [θ], [ʃ], [v], [ð], [ʒ], [h] (Shadle,

1990). In Turkish, the fricative consonants are [f], [s], [ʃ], [h], [v], [z], [ʒ] (Zimmer & Orgun, 1999).

Genitive case: The case that is used to indicate possession. In Turkish, the genitive case marker is *-(n)In/-Im* (e.g., *kitabın* ‘of the book’) (Sebüktekin, 2017) and in English, the genitive case marker is *-s* (e.g., David’s book) (Payne, 2009).

Inflectional Morphology: Altering the form of the word in order to fit various grammatical types such as case, number, gender etc. (Crystal, 2008).

Interlanguage: A language formed by a learner of a second language that includes features that are absent in the speaker’s first and second languages (Selinker, 1972).

Locative case: The case that indicates the location of the noun in the sentence. In Turkish, the locative case marker is *-DA* (e.g., *arabada* ‘in the car’) (Sebüktekin, 2017).

Monolingual: The case of speaking only one language without knowledge of a second language (Romaine, 1995).

Morphological Complexity: The lexical and grammatical rules adopted by the inflectional morphology special to a language and the diversity of the inflectional components in a language (Pallotti, 2015).

Morphology: The study of the formation of the words in a language and their varieties after interaction with one another (Haspelmath & Sims, 2013).

Morphophonological Complexity: The extent of phonological recognition of the morphemes based on their linguistic environment (Ettlinger, Bradlow, & Wong, 2014).

Morphophonology: The study of the relationship between morphology and phonology, specifically the articulation differences (Basbøll, 2015).

Phonological Complexity: The presence of large numbers of components necessary to explain an expression and the phonetic difficulty in the explanation (Chitoran & Cohn, 2009).

Phonology: The study of sounds or signs – the phonological organisation – and their order in a language (Lass, 1998).

Sibilant: The fricative consonants that are produced by creating air through the teeth (e.g., [s], [z], [ʃ], and [ʒ] (Reidy, 2016).

Non-sibilant: The fricative and affricates that are produced only with the tongue or lips (e.g., [p], [b], and [m] (Tabain, 1998).

The Missing Surface Inflection Hypothesis: The hypothesis supporting that interlanguage grammars of second language learners are not impaired and that it reserves syntactic feature of variable inflectional morphology (Haznedar & Schwartz, 1997; Prévost & White, 2000)

Universal Grammar: The innate language property people possess biologically (Chomsky, 1965).

Vowel Harmony: The combination of the same category of vowels in a noun (Göksel & Kerslake, 2004).

1.7 Abbreviations of the Terms

1SG:	First person singular
2AFC:	Two alternative forced choices
3SG:	Third person singular
3PL:	Third person plural
ABL:	Ablative case
AOR:	Aorist
FAFT:	The Full Access Full Transfer Hypothesis
FFFH:	The Failed Functional Features Hypothesis
FRH:	Feature Reassembly Hypothesis
FUT:	Future Tense
INSTR:	Instrumental case
L1:	First Language
L2:	Second Language
LOC:	Locative case
MSIH:	The Missing Surface Inflection Hypothesis
MTH:	Minimal Trees Hypothesis
PLR:	Plural

PROG:	Progressive
POS:	Possessive case
PREP:	Preposition
PST:	Past Tense
PSV:	Passive Voice
SLA:	Second Language Acquisition
UG:	Universal Grammar

1.8 Conclusion

Two typologically distinct languages, English and Turkish, accommodate different morphological and phonological features, which may pose a challenge for language learners. The main motivation of this study is to address the gap in the existing literature by discussing experimental data from Turkish children who are acquiring inflectional morphology, more specifically, the plural marker–s in L2 English. Regarding this motivation, three tasks have been prepared, elicited imitation, elicited production, and comprehension, with an aim to examine the comprehension and production of the plural inflection in child language. The research questions with the predictions were presented with brief support of research in the field. Now, we move on to a detailed discussion of plural marking in Turkish and English.

CHAPTER 2. PLURAL MARKING in ENGLISH and TURKISH

2.1 Introduction

This chapter presents how Turkish and English mark plural morphology from a morphosyntactic and phonological stand. The preceding sections include the allomorphs allowed in both languages, regularities, and irregularities in plural marking, including related examples.

2.2 Plural Marking in English and Turkish

The English pluralisation is conducted using the plural marker *-s*, and it is phonemically the same as the third-person singular marker of the present tense. The use of the plural morpheme in English follows a set of rules for regular and irregular nouns, and there are some exceptions and restrictions to these rules (Blevins, 2006). Basically, the plural marker in English is dependent on the countability and uncountability of the noun. The countability may not always be understood only by the morphological structure of the noun. That is to say, the context may determine whether the noun is countable or uncountable (Iwasaki, Vinson, & Vigliocco, 2010).

In Turkish, the plural meaning is conveyed using the *-lar* morpheme, which is constrained by phonological and morphosyntactic rules. The plural marker *-lar* in Turkish changes into [ler] or [lar] according to the last vowel of the noun depending on the last vowel of the noun it is attached to (Walter, 2014).

2.2.1 The allomorphs of the plural marker

In English, the plural marker *-s* has threefold pronunciation based on the last vowel or the consonant of the noun. These allomorphs are as follows: [s], [z] and [ɪz]/[əz] (Jespersen, 2013).

- The allomorph [s] occurs after unvoiced non-sibilants as in caps /kæps/, links /lɪŋks/, lamps /læmps/.
- The allomorph [z] occurs after voiced non-sibilants as in bees /bi:z/, ladies /'leɪ.diz/, flowers /flaʊə'z/.
- The allomorph [ɪz]/[əz] occurs after sibilants (hissing or hushing sounds) as in bushes /'bʊʃɪz/, churches /'tʃɜ:ʃ.əz/.

2.2.3 Plural marking on compounds

(2) postman postmen
gentleman gentlemen
silver spoon silver spoons (van Schaaik, 2020: 157)

(3) trafik ışık-lar-ı
traffic light-PLR-POS
'*traffic lights*' (Ketrez, 2012: 56)

(4) kadın-lar tuvalet-i
 woman-PLR toilet-POS
 'ladies' room' (Ketrez, 2012: 56)

When a compound noun that has a plural suffix in its first word is pluralised, the plural in the first word must always be omitted as in (5):

- (5) kadın tuvalet-ler-i
 woman toilet-PLR-POS
 ‘ladies’ rooms’ (Ketrez, 2012: 56)

2.2.4 Countability and plural marking

The difference between countable and uncountable nouns is surely a dichotomy semantically and morphosyntactically (Muromatsu, 2003). The semantic perspective proposes that English nouns are classified as either countable or uncountable. In this respect, the countable nouns are named ‘atomic’, meaning that they have the characteristics of being undividable into smaller units (Wilhelm, 2008). On the other hand, the morphosyntactic aspect of countability represents that the countable nouns can be pluralised using the plural marker while the uncountable nouns cannot be combined with it.

The uncountability of nouns in English does not depend on being concrete or abstract substantives. Some concrete nouns, such as furniture, can be uncountable; therefore, it can lead to a confusion in L2 learners (Bale & Barner, 2009). On the contrary, some of the abstract nouns can be countable if they refer to the meaning of the times that they have been experienced (Serwatka & Healy, 1998). The meaning of such examples can only be inferred from the context since they cannot reflect their countability in single expressions. The lack of harmony between the semantic use and the grammar rules of the specific nouns contributes to the arbitrariness of the English plurality. The fact that language learners cannot distinguish between countable and uncountable nouns merely based on the numeral adjectives used with them, increases the need to be more frequently exposed to the language in order to provide familiarity with various contexts (Tsang, 2017).

There is no clear divergence among nouns in Turkish in terms of countability (Göksel & Kerslake, 2004). One may encounter nouns combined with the indefinite article and the plural suffix in Turkish. That is to say, the nouns that can be classified as uncountable in English, such as *koku* ‘smell’ and *su* ‘water’, may be pluralised using a plural marker in Turkish as exemplified in (6) and (7), respectively:

- (6) Ev-den çok güzel koku-lar gel-iyor.
 Home-ABL very nice smell-PLR come-PROG

'The house smells good.'

- (7) Bu balık soğuk su-lar-da yetiş-ir.
This fish cold water-PLR-LOC grow-PRE.

'This fish grows in cold water.'

The pluralisation can also occur with quantifying determiners in both English and Turkish; however, their morphology differs significantly from each other. The quantifying determiners in English are divided into a number of categories: the ones that can be used with countable nouns, the ones that can be used with uncountable nouns and those that can be used with both countable and uncountable nouns (Rothstein, 2010).

On the other hand, since Turkish does not employ a countability distinction, all the quantifying determiners, such as *çok* 'a lot of, many', *fazla* 'too much, too many', *az* 'not much, not many', *biraz* 'some', *birkaç* 'a few, several' can be used regardless of the countability parameter in contrast to English (Van Schaaik, 2020). For instance, in English, the quantifier *some* should always be used with a plural marker in countable nouns as given below:

- (8) There are *some apples* in the fridge.

However, the following noun after the quantifier *biraz* 'some' is not attached with a plural marker in Turkish (see 9). The plural meaning is conveyed through the quantifier; therefore, the singular form of the noun is combined with *biraz*.

- (9) *Biraz elma ve portakal* al-dı-m.
Some apple and orange buy-PST-1SG

'I bought some apples and oranges.'

The meaning is completely different when the quantifiers *bazı* 'certain, a number of' *bütün/tüm* 'all, the whole' are used with a singular and plural noun in Turkish (Göksel & Kerslake, 2004). On the contrary, these quantifiers are always used with a plural marker in English inflectional morphology. See the examples 10 and 11 below:

- (10) *Bütün ev* bu sabah erken uyan-dı.
All house this morning early wake up-PST

'The whole house woke up early this morning.'

- (11) Sokak-taki bütün ev-ler boya-n-acak.
 Street-LOC all house-PLR paint-PSV-FUT
'All the houses on the street will be painted.'

In Turkish, it is possible to see the plural suffix attached to countable and uncountable nouns. To put it more clearly, when it comes to nouns that indicate measurement and portion in Turkish, it is seen that uncountable nouns are used with a plural suffix. The use of *-lar* with uncountable nouns is usually common in everyday speech to emphasise the type, kind, or the difference of the object in question rather than its quantity or number (van Schaaik, 2020). See the example in 12:

- (12) İtalya makarna-lar-ı ve sos-lar-ı-yla ünlü-dür.
 Italy pasta-PLR-POS and sauce-PLR-POS-PREP famous-AOR
'Italy is famous for its pastas and sauces.'

Furthermore, Turkish allows for the use of the plural suffix with uncountable nouns to express that there are many types of an item, and this usage is the same in daily expressions in English. See the example in 13:

- (13) Kahve-ler-i iç-ti-ler ve tatlı-lar-ı ye-di-ler.
 Coffee-PLR-ACC drink-PST-3PL and dessert-PLR-ACC. eat-PST-3PL
'They drank their coffee and ate their desserts.'

On the contrary, while it is possible to see the plural suffix and uncountable noun or noun phrases if it is an item that occupies a very large place in the area in Turkish, English does not allow for this type of use in neither formal nor informal contexts (van Schaaik, 2020). See the example in 14:

- (14) Koltuk-taki kir-ler-i deterjan-la temizle.
 Armchair-LOC dirt-PLR-ACC detergent-INSTR clean.
'Clean the dirt on the armchair with detergent.'

2.2.5 The pluralisation of adjectives

In Turkish, adjectives can act as a noun when pluralised, and the same meaning is expressed with the article *the* and the bare form of the adjective in English. Consider the following examples:

- (15) genç /genç/ ‘*young*’ genç–ler ‘*the young*’
 hasta /hasta/ ‘*sick*’ hasta–lar ‘*the sick*’

This usage is also an example of a semantic shift in both languages.

2.2.6 The plural marker in wishes and abstract concepts

One of the remarkable uses of the plural suffix in Turkish is that daily expressions such as wishes, greetings or valedictions are stated in the plural form. See the following examples:

- (16) İyi akşam–lar.
 Good evening–PLR
 ‘*Good evening.*’
 İyi ders–ler.
 Good class–PLR
 ‘*Have a nice class.*’
 Mutlu yıl–lar.
 Happy year–PLR
 ‘*Happy new year*’

Even though the expression conveys the non-recurring meaning, the wording includes the plural morpheme *–lar*, therefore the recipient understands that the wish is only for a one-time intention unheeding the plural suffix (van Schaaik, 2020).

Abstract concepts expressing emotional states or physical situations that a person feels or experiences can be pluralised in Turkish. When these types of moods are used with a plural suffix, it means that these states happen frequently. In example (17), a person who has recently felt distracted uses the abstract word *dalgınlık* ‘absentmindedness’ with a plural expression in order to express that it happens very often.

- (17) Bu tür dalgınlık-lar-ım çok ol-uyor.
 Such absentmindedness-PLR-1SG POS often happen-PROG
'I have such distractions very often.'

Such examples are often observed in informal casual conversations. English does not allow such usage.

2.2.7 The plural marker in dates and places

The use of plural suffixes in dates and place names indicates that there is no certainty in the meaning of the expression. When such usage is made on dates, it is understood that a period covering a short time before and after that date is expressed. See the example in 18:

- (18) 1995 orta-lar-ı-nda
 1995 middle-PLR-ACC-LOC
'about the middle of the 1995s'

Similarly, the plural suffix used in place names, occasionally in address descriptions, indicates that a place is expressed near the specified address. See the example in 19:

- (19) İzmir civar-lar-ı-nda
 İzmir surrounding-PLR-ACC-LOC
'around Izmir'

This usage gives flexibility to the narration since it does not have a definite meaning. When it is aimed to express the age of people, it means that there is no definite information about the age, and it is said for an approximate age range. See the following example:

- (20) yetmiş yaş-lar-ında bir kadın
 Seventy age-PLR-LOC one woman
'a woman in her seventies'

However, English does not allow the use of plural marker to express approximate values. Instead, adverbs or prepositions (e.g., around, about) are used to convey the meaning of approximation in such expressions.

2.2.8 The plural marker with proper nouns

In Turkish, the plural suffix refers to the other members of the family close to that person when it is added to the words denoting the family members with the possessive suffixes –(i)m (my) or –(i)n (your) . Consider the example in (21):

- (21) Teyze–m–ler Bolu'da otur–uyor–lar.
Aunt–POS–PLR Bolu–LOC reside–PROG–3PL
My aunt and her family reside in Bolu.

At this point, a possessive suffix and a plural suffix must be included in the same expression (Sebüktekin, 2017). Besides, in nouns denoting a family or a group in Turkish and English, the plural suffix is added to the proper noun. This usage requires the plural suffix –lar to be separated from the proper noun by an apostrophe in Turkish. Consider the following example:

- (22) Oğuzhan'–lar gel–di.
Oğuzhan –PLR come–PST
'Oğuzhan's family (company, group etc.) came.'

The plural marker –s is attached to the proper noun with no punctuation in English and it is usually attached to the family name of the person (Sloat, 1969) as given in 23:

- (23) The Browns invited us for dinner.

2.2.9 The plural marker as means to resolve ambiguity

Although the English plural marker is mostly used with countable nouns, there are exceptional cases in which a specific list of uncountable nouns can be used with the plural marker. Beard (1982) notes that *water* and *waters*, for instance, refer to different meanings: the former is defined as the liquid we consume while the latter refers to the area of water. Similarly, hurting someone's feelings, talking about someone's insecurities are further examples of uncountable but pluralised nouns (24) (Acquaviva, 2008). Although the substance *coffee* is uncountable like the *water* example, the pluralised examples of coffee can be encountered in daily life expressions such as ordering *two coffees*.

- (24) You should refrain from asking questions about their loss as you might hurt their feelings.

If there is a numeral in a noun phrase that defines the noun as a modifier in Turkish, it is not possible to add a plural suffix to the noun at this point. In such expressions, the noun phrase takes the plural meaning from the numerical modifier at the beginning and does not need a plural suffix. See the example below:

(25) üç çocuk

Three child

'Three children'

The only exception for a noun phrase made with numeric expressions without plural suffixes is encountered in proper nouns denoting a certain group name. See the example sentence in 26:

(26) Üç güzel-ler Kapadokya'-nın simgesi-dir.

Three beauty-PLR Capadocia-POS symbol-AOR

'The three beauties is the symbol of Cappadocia.'

The examples for this exception are a few. In these noun phrases, both the numeral determiner and the plural marker are used (Ketrez, 2012).

2.3 Conclusion

The plural marking in English and Turkish follows distinctive ways in terms of morphology and phonology. In English, the plural marker is *-s* on regular nouns, and it has three allomorphs, [s], [z] and [ɪz]/[əz]. A specific group of nouns in English are pluralised using an irregular plural suffix such as *-i* (e.g., cacti), *-ae* (e.g., formulae), *-(r)en* (e.g., children). On the other hand, Turkish plural marker *-lar* follows the vowel harmony and alters into [ler] or [lar] according to the last vowel of the noun in the bare form. In contrast to English, Turkish does not have any irregular suffixes in plural inflection.

While English pluralisation rules mainly depend on the countability of the nouns, there is no significant distinction in Turkish nouns in terms of countability. That is, the uncountable – the nouns that cannot be pluralised – are usually allowed to be attached with a plural marker in Turkish. Similarly, Turkish inflectional morphology requires the use of plural markers in wishes and abstract concepts (e.g., *İyi yolculuklar* 'Have a safe journey') even though the wish refers to an action that will take place only once. The Turkish plural

marker is also used in the expressions of approximate descriptions about time, place or people's age, and English plural inflection does not allow this usage.

Turkish and English plural morphology has several similar features, such as the use of plural markers with proper nouns to refer to the family or the group of the person. Nevertheless, in Turkish, the plural marker *-lar* can be attached to either the first name or the last name with an apostrophe as in *Oğuzhan'lar geldi* (Oğuzhan's family/company/group) and in English, the plural marker *-s* is attached only to the last name as in the Browns invited us for dinner.

The similarities and differences between Turkish and English were presented with supporting examples in this chapter. The following chapter will be devoted to the crosslinguistic review of the studies conducted in the first and second language acquisition of the plural inflectional morphology with an exclusive highlight on Turkish and English.

CHAPTER 3. LITERATURE REVIEW

This section introduces functional and lexical categories first. Within the Generative Framework, approaches that assume Full Transfer from the first language (L1), but different degrees of UG accessibility in second language acquisition (L2) will be outlined next. The specific focus will be on two major theoretical approaches, namely the Feature Reassembly Hypothesis and the Missing Surface Inflectional Hypothesis. The chapter continues with a discussion of the studies which investigated the acquisition of plural morphology in the L1 and L2 literature. The next chapter is dedicated to the methodology used in this thesis.

3.1 Introduction

The acquisition of morphosyntactic properties in a second language (L2) has appealed to scholarly interest for decades (Alemán Bañón, Miller, & Rothman, 2017; Behjat & Sadighi, 2012; Farhy, Verissimo, & Clahsen, 2018; Haznedar, 2003; Shin & Miller, 2022; Sundquist, 2005; White, 2003). Within the Generative Framework, lexical and functional categories constitute the projections of syntactic categories to be acquired (Abney, 1987). Lexical categories can be viewed as open-class words with descriptive content, including different parts of speech such as nouns, verbs, and adjectives; functional categories, on the other hand, are closed-class words with a pure grammatical meaning including free and bound morphemes such as past tense *-ed*, articles and determiners.

The acquisition of functional categories in monolingual children has been discussed under two broad theoretical frameworks. On one hand, the Weak Continuity Hypothesis, claims that lexical categories are initially projected, and a gradual development of functional categories is observed in the course of language development (Radford, 1990; Tsimpli, 1992). For instance, in the sentence *Boy play football* the lexical category ‘boy’ is present in the early grammar, but the functional element, past tense morpheme *-ed* is missing from the verb ‘play’. Such violations are taken as evidence for a fundamental difference between early child and adult grammars. In other words, the child is assumed to start to produce lexical categories, and functional categories are predicted to emerge and mature developmentally in time (Clahsen, Eisenbeiss, & Vainikka, 1994; Rizzi, 1993/94). The Strong Continuity Hypothesis, on the other hand, posits that child grammars are no different from adult grammars (Pinker, 1984; Poeppel & Wexler, 1993). That means both lexical and

functional categories are projected from the very beginning of the language acquisition process.

Within the Generative Framework, the degree of availability of first language (L1) properties and accessibility to UG constrained principles and parameters has attracted attention in L2 acquisition, too (e.g., Epstein, Flynn & Martohardjono, 1996; Flynn & Manuel, 1991; Hawkins & Chan, 1997; Haznedar, 1997; 2003; Smith & Tsimpli, 1995; Sprouse, 2011; White, 2003). In the next section, for the purposes of this thesis, the focus is narrowed down on accounts that assume Full transfer from L1, but different levels of accessibility to UG constrained abstract features in L2 acquisition.

3.2 Functional Categories in Second Language Acquisition: Full or Partial Access to UG?

Within the Generative Framework, one of the hotly debated topics is whether lack of or optionality in the use of functional elements in the interlanguage of L2 learners is an indication of impairment in the abstract features associated with these functional categories (Haznedar, 2003; Hawkins & Hattori, 2006; Mobarak, 2007; Prévost & White, 2000; Tsimpli & Dimitrakopoulou, 2007). Among many accounts, the focus will be on accounts that assume Full transfer of L1 abstract categories.

One of the accounts that fall under Full Transfer, but partial access to the UG constrained principles and parameters is the Minimal Trees Hypothesis (MTH) which was put forward by Vainikka and Young-Scholten (1996). The MTH asserts that the initial stage of L2 acquisition does not involve full functional categories. They claim that L2 learners make use of the lexical categories of their L1 in the L2 acquisition. This approach has been the milestone in research related to L2 acquisition. According to the hypothesis, L2 learners do project the lexical categories properly with the help of their first language knowledge; yet they require some time to properly reflect the functional categories. However, the case for the reflection of functional categories differs in that the L2 learners do not transfer them from their native language(s). Functional categories develop incrementally as long as the input in the second language is given continuously. According to the MTH, the interlanguage takes time to properly evolve; thus, improvement takes place step by step until the full functional categories are reached out.

One study that lends support to the MTH examined the acquisition of the head directionality parameter by L1 Turkish and L1 Korean adults who learned German as a

second language (Vainikka & Young-Scholten, 1994). Turkish and Korean belong to the same language group in terms of the Head Parameter, in the sense that both are head-final languages. On the contrary, German is characterized as a V2 language, where the verb occupies the second position in a syntactic structure. The results demonstrated that almost all verb phrases were positioned head-final by the L1 Turkish and L1 Korean participants. The research provided data that complied with the assumptions of the MTH in terms of the transfer of the features of the Head Parameter, and it supported that functional categories are not transferred at initial stages of L2 acquisition. However, the assumptions of the MTH have been refuted by the data obtained in research which revealed that the functional categories were found to have been transferred at the initial state properly from the native language (Dube, 2000; Haznedar & Schwartz, 1997).

Another account that assumes Full Transfer but partial access to UG constrained abstract features is cited as the Failed Functional Features Hypothesis (FFFH), whose proponents claim that L2 learners can have access to only a certain set of parametrized values or properties that are instantiated in their L1. In other words, FFFH asserts that there is basically no parameter resetting in L2 acquisition (Hawkins, 1998; Hawkins, 2000; Hawkins & Chan, 1997; Smith & Tsimpli, 1995). FFFH has received attention in the field starting with Hawkins and Chan (1997)'s study, which claimed that second language learners and native speakers develop distinct ways of representations of functional categories. L1 Chinese and L1 French participants were given a restrictive relative clauses task in English, a property which was present in French but absent in Chinese. Thus, the Chinese participants were expected to fail in acquiring the feature that is not present in their L1. Similarly, the L1 French participants were expected to complete the task successfully thanks to the presence of *wh*-feature in their native language. The results demonstrated that L1 Chinese participants' performance was far below the L1 French group. The conclusion reached was that second language learners and native speakers develop distinct ways of representations. FFFH does not only make predictions with respect to the initial stages of L2 acquisition. It asserts that it would be impossible for a second language learner to master the L2 in native like proficiency even at final stages (Hawkins & Liszka, 2003). Hawkins and Liszka (2003) proposed that features such as the tense feature would not be accessible in L2 acquisition if it did not exist in L1. Similarly, Franceschina (2001) asserts that the absence of gender

features in English learners of Spanish as a second language would lead to a deficiency in the interlanguage grammar³.

On the other hand, L2 acquisition is hypothesized to be instantiated by L1 principles and parameters, that is, all the abstract features minus the lexical items in L1 constitute the initial state of the new grammar system (i.e., Full Transfer). In addition, an entire set of values assigned to the principles and parameters dictated by the UG is predicted to be available at the L2 initial state (i.e., Full Access). That is, L2 acquisition is constrained by L1 features and the options drawn from the UG principles and parameters. This position is known as The Full Transfer/Full Access Hypothesis (FT/FA: Dekydtspotter, Schwartz, & Sprouse, 2006; Schwartz & Sprouse, 1996; Sprouse, 2011). The Full Access Full Transfer (FAFT) Hypothesis occurred in lieu of the Minimal Trees Hypothesis as claimed by Schwartz and Sprouse (1996). The argument is that L2 learners possess and transfer all L1 properties including an inventory of UG parameters and functional categories. The focus is on the presence and absence of features and categories specifically. The perspective of Vainikka and Young-Scholten (1996) was based on the lack of morphology in the initial state. However, Schwartz and Sprouse (1996) claimed that lack of morphology may still result in the reflection of syntax which leads to the interpretation of functional categories being present.

Data that complies with and provides evidence for the FAFT hypothesis was obtained from a Turkish-speaking child L2 learner of English and an English-speaking adult L2 learner of Turkish (Haznedar, 2003). The child data came from previous work (Haznedar, 2001; 2003) and the adult data came from speech recordings of an American Turkish L2 speaker. The child participant mastered copula *be* and overt subjects at a relatively shorter period when compared to the gradual development of subject verb agreement and past tense morphology in L2 English. Similarly, the Turkish L2 speaker did not have much difficulty in supplying tense marking and subject verb agreement when compared to accurate suppliance of case marking in Turkish. Turkish preschoolers learning English as a second language are cited to have no difficulty in their use of overt subjects and copula *be*, whereas

³ Here, one other hypothesis, the Interpretability Hypothesis (Tsimplici, 2003; Tsimplici & Dimitrakopoulou, 2007; Tsimplici & Mastropavlou, 2007), which lends support to partial access to the UG, needs to be given. The claim is that the status of the abstract feature to be acquired determines constraints on learnability and the (re) setting of the L1 features. Specifically, interpretable features, which are available for a lifetime, are accessible, but uninterpretable features pose difficulty in L2 acquisition since they are subject to maturational factors, inconsistent input and L1 effects. Further discussion of this account is beyond the scope of this thesis.

the development of subject verb agreement and regular past tense morphology is found to be a protracted phenomenon (Geçkin & Haznedar, 2008; Haznedar, 1997). Similarly, Özçelik (2016) tested low level (i.e., word level) and high level (i.e., sentence and phrase level) acquisition of prosody by French and English learners of Turkish as a second language. English-speaking learners faced difficulty in learning word level prosodic constituents; however, their errors were not random, rather they were UG-constrained. Both groups of learners found it easier to master higher level prosody despite lack of explicit instruction. Overall, research findings on varying levels of L2 Turkish and L2 English learners support the FAFT approach.

Next, we turn to a discussion of two approaches that explain learnability problems in the acquisition of functional elements in L2: the Feature Reassembly Hypothesis and the Missing Surface Inflection Hypothesis. Both accounts explain variability in learner interlanguage as a mapping issue that arises from the differences between L1 and L2.

3.2.1 The Feature Reassembly Hypothesis

The Feature Reassembly Hypothesis (FRH) was put forward to explain that L2 acquisition is possible as long as the learner reconfigures the lexical features of the native language onto novel functional bundles appropriate for the second language (Lardiere, 2005, 2008, 2009). Thereby, it can only be achieved if a similarity exists between the L1 and L2 and if the learners can properly identify the elements that project morphological and lexical features in their first language on the target language. Lardiere (2008) highlighted that the L2 learners' mistakes and errors can only be understood by examining morphosyntactic distribution of the grammar features in the language. Simply put, each language can be regarded as a spider web, and the morphological system including the grammatical features form a unique pattern in this web. After the first encounter with the language, the learner needs to identify this new pattern. In other words, the learner is required to calibrate her linguistic web according to the new set of features and remap the already existing features onto the novel ones. The new language is constructed by adding the morphological features into their L1 knowledge and by making necessary adjustments.

The hypothesis is backed up by data obtained from a single Mandarin-speaking subject, *Patty*, learning English as a second language in the US. *Patty*, an end-state speaker of L2 English, had 85% accuracy in supplying the definite article 'the'; however, the suppliance rate fell to 74% for the indefinite article '(a)n' (Lardiere, 2008). This difference

in the rate of accuracy was linked to the difficulty in reassembling the number and plurality features in L2 English (Lardiere, 2005). Coming from a first language which marks number via a questionable numeral, *Patty* needs to select the appropriate [$\pm$ number] and [$\pm$ plural] feature when acquiring plurality in L2 English.

The FRH assumes that if the linguistic features include great numbers of unknown features, the learner will need to remap, or, as the name suggests, re-assemble novel features, which will result in longer duration and increased complexity in the language acquisition process (Slabakova & Gajdos, 2008). It is also assumed that the process of mapping may be interrupted or completely stopped if the learner does not receive consistent input (Lardiere, 2009). The languages under investigation in this thesis, Turkish and English, assemble features for [$\pm$ number] and [$\pm$ plural] differently, thus, difficulty in the reassembly of L1 features onto those of L2 is expected. Now, we move on to the second hypothesis that accounts for variability in L2 interlanguage.

3.2.2 The Missing Surface Inflection Hypothesis

A second approach, the Missing Surface Inflection Hypothesis (MSHI) states that variable inflectional morphology in the interlanguage grammars of second language learners does not necessarily suggest impaired syntax (e.g., Geçkin & Haznedar, 2008; Haznedar & Schwartz, 1997; Ionin & Wexler, 2002; Prévost & White, 2000). As the name suggests, the inflections may not exist on the surface, yet second language learners may hold the knowledge of abstract properties. Therefore, it is thought that second language learners have the knowledge of the features underlain by tense, agreement, number, and determiner. The omissions or substitutions in the L2 learners' productions of inflectional morphology is ascribed to this assumption in that the surface functional morphology may not project the knowledge because of the mapping failure (Slabakova, 2009). The MSIH proposes that second language learners have access to the UG, and that they are constricted by their native language. There may be an incompatibility between the surface morphology and abstract syntactic properties. As a result, it may pose difficulty for second language learners to master morphology and syntax of the target language.

White (2003), for instance, reports data from a Turkish second language learner of English, *Serap*, who resided in Canada for many years. *Serap* had no problem in verb placement or overt subject suppliance, yet she still struggled with the accurate use of English articles despite long years of residence in the English-speaking country. This inconsistent

use of functional elements was explained through learner inability to map L1 properties onto those of L2, (i.e., an access failure), rather than a representation failure when target language forms are produced. Similarly, Goad, White, & Steele (2003) elicited oral production data from Mandarin speakers of L2 English. The learners ($n=12$) described two sets of pictures which targeted past and present tense morphology. The participants were observed to use past tense morphology optionally as in 'I never *saw* them before; they *open* my brain' (p. 255) within the same context. However, the subjects exhibited more than 85% accuracy in producing copula *be* and auxiliary *be*. The observed variability across domains was explained via difficulty in mapping the L1 prosodic structure on the L2. In other words, since Chinese does not allow word final consonant clusters, the learners omitted inflections with such clusters in oral production.

Further evidence for the MSIH comes from previous work which compares rates of accuracy between comprehension and production tasks. McCarthy (2012) investigated gender and number agreement of Spanish second language learners. The L2 learners were presented production and comprehension tasks including adjectives and nouns, and they were asked to complete the tasks with correct number and gender agreement. The production task included pictures of different colours, while the comprehension task required the participants to choose among three pictures related to a short story. The pictures contained everyday items, and the questions were given in the short story as a gap filling activity. The fact that Spanish nouns require selection in terms of gender, the participants chose the best fit for the questions in terms of singular or plural and feminine or masculine nouns. The research results indicated that the learners had not demonstrated consistency across tasks. The fact that learners demonstrated inconsistency in the production task was attributed to a possible difficulty with representing the morphophonological structures. McCarthy (2012) stated that the morphological variability cannot be ascribed to the lack of correct production, instead, it could be highly related to mapping problems.

De Garavito (2003) sought to reveal the L2 learners' performance in recognition and production tasks by studying verb movement and inflection of Spanish second language learners. She asked the participants to read a story in their native language, English, and to retell it in the second language, Spanish in the production part. In the second part, the learners were asked to complete a recognition task which required them to choose the correct subject for the verb in each statement. By this means, she tested subject-verb inversion and grammaticality. The results of her study demonstrated that the participants' performance was

better in the recognition task than in the production task. She concluded that the significant difference between the tasks showed that the recognition task could be run in studies where the underlying knowledge of the second language learners was to be examined.

In a similar vein, Geçkin and Göksoy-Buvan (2021) investigated the rate of accuracy in verbal and nominal morphology of Turkish speakers learning English as a foreign language. The learners (n=20) took part in the same story narration task in two modes, written and spoken, a week apart. The learners performed statistically more accurately in their written narratives than in their spoken narratives in using articles, present and past tense morphology. The difference in the rates of accuracy between the oral and written narratives was attributed to a mapping problem rather than an underlying deficit in L2 grammars.

The major difference between FRH and MSIH seems to lie in the way these two approaches explain language internal variability. MSIH sees variability as an access failure whereas FRH sees it as an inability to reassemble the features especially when the two languages mark the same feature in distinct ways. For this reason, MSIH suggests a difference in accuracy between the comprehension and production tasks. Yet, FRH does not necessarily claim for such a difference.

Much of the research in the L2 literature has been conducted on verbal inflection. However, the MSIH and related issues covers the nominal features of morphology as well. The predictions with respect to underlying knowledge of abstract features may be existent for nominal inflection as well. This thesis is constructed under the Generative Framework with an attempt to test the predictions of Missing Surface Inflection Hypothesis in the acquisition of nominal morphology, namely the plural marking. Based on the literature discussed above, the predictions of the MSIH that relate to this thesis are listed below:

1. L2 learners are expected to be more accurate in the comprehension task than in the production tasks.
2. L2 learners are expected to manifest surface variability in the form of omissions and substitutions in producing plural morphology depending on the interaction between Turkish and English.
3. Variability in L2 productions may arise from a mismatch between the L1 Turkish and L2 English prosodic systems. For instance, errors of omissions are expected to be higher in acquiring morphophonologically complex L2 systems, especially when the L1 does

not allow such complex systems including production of inflections with consonant clusters.

The following section will present an elaborate discussion of the studies conducted on the acquisition of plural morphology in the first and second language acquisition literature.

3.3 Acquisition of the Plural Morphology

3.3.1 First language acquisition of plural inflectional morphology

Turkish-speaking children start to understand and produce error-free plural inflections by the time they are 15 months old (Aksu-Koç & Slobin, 1985). Based on the data obtained from structured plays and story narration tasks, the acquisition of plural morphology by two-to-six-year-old Turkish speaking children is reported to be developmentally constrained (Kılıç, 2002). The acquisition of plural inflection at early ages is attributed to the Turkish nominal features such as less complexity on noun forms, scarcity of the irregular nouns and the simplicity of the pluralization process. The data from a monolingual Turkish-speaking child demonstrated that the production of inflected nouns took place between the ages of 1;6 and-1;9. (Ketrez & Aksu-Koç, 2009). The child in this study was assumed to fall somewhere between the onset of the morphology acquisition and the first occurrence of error-free production of plural morphology.

In addition to longitudinal studies, experimental work was designed to explore the semantic interpretation of plurality by Turkish-speaking children. One study explored the interpretation conjunction receives in plural definite predicates by Turkish-speaking preschoolers (Geçkin & Yaşar, in press) with a comparison to English-speaking preschoolers (Tieu, Romoli, Poortman, Winter, & Crain, 2018) on the same task. Two groups of children assigned the same semantic interpretation, the split interpretation, to test sentences such as ‘These bears are big and small’. Turkish-speaking three-year-olds, however, differed from English-speaking three-year-olds and Turkish-speaking adults in that they failed to assign a conjoined, that is the Boolean interpretation, to test sentences such as ‘These bears are big and white’. These findings suggest that as opposed to English-speaking children, Turkish-speaking children may be going through a developmental stage to converge to adult like semantic interpretation (i.e., the Boolean interpretation) in conjoined plural definite predicates.

In one other experimental study, Renans, Sağ, Ketrez, Tiue, Tsoulas, Folli, Vries and Ramoli (2020) investigated the semantic interpretation Turkish-speaking adult (n=42) and five-year-old child participants (n=21) assigned to plural sentences in exclusive or inclusive contexts. The positive test sentences such as *Chicken planted tulips* yielded an exclusive reading while the negative sentences such as *Chicken didn't plant tulips* yielded an inclusive reading. The exclusive reading suggests that 'Chicken planted multiple tulips' and the inclusive reading suggests that 'Chicken did not plant any tulip'. Although Turkish was cited to allow for an exclusive reading only, the data in this paper verified for the inclusive aspect of Turkish in plural statements. In that sense, the inclusiveness of the plural was similar to that of the English plural. Still further research is needed for the examination of the Turkish plural in the inclusive perspective.

One other experimental study compared the semantic interpretation of plurals in Turkish-, Hungarian-, and German-speaking children (Yatsushiro, Geçkin Harmati-Pap, Alexiadou & Sauerland, in press). The monolingual child and adult participants were presented with the same two experiments across three languages. In the first experiment, the children were presented with pictures and were asked to respond to a series of yes/no questions such as 'Does this boy have tongues?' in singular referent contexts. Even though plurals are not allowed in singleton referent contexts, Turkish- and Hungarian-speaking children accepted the use of plurals in these contexts. The second experiment was a covered-card task with singular and plural referents. One of the three cards shown on a computer screen was covered and the participants were instructed with a pre-recorded sentence as 'Show me the card that has X'. The children mostly chose the open cards with a singleton referent while the adults went for the covered cards. The results of the child data are consistent with the plural unmarked account.

The production of the plural morpheme was studied in the speech of Turkish-speaking children with typical and atypical language development. In one final study, Güven & Leonard (2020) compared the productions of multiple suffixes including the plural suffix in the spontaneous speech productions of Turkish-speaking children with typical development and those with developmental language delays. None of the children violated the rules of vowel harmony, which is acquired quite early by Turkish children. Among the suffixes examined, the suffix which was closest to the word stem was the plural suffix and it was uttered more accurately by the children with typical development than those with developmental language delays. What is more, since the Turkish plural has only two the

allomorphs *-ler* and *-lar*, which can be viewed as phonologically not as complex as the English plural allomorphs, no errors of substitution was observed across groups. However, the rich allomorphs of the English plural can pose difficulty for Turkish children acquiring English as an L2.

In addition to Turkish-speaking children, research investigating the acquisition of inflectional morphology by English-speaking children is abundant and provides a comprehensive explanation on how monolinguals perceive plurality. The data collected with production tools dates to the 1970s. It was reported that monolingual children start forming plural nouns after they are 24 and 34 months old (Brown, 1973). The production of the plural morpheme begins around the age of two in monolingual children (de Villiers & de Villiers, 1973; Mervis & Johnson, 1991). 27-month-old English-speaking children were able to complete the sentences by forming plural nouns (Ferenz & Prasada, 2002). The famous Wug test (Berko, 1958) was adopted and applied on 24-month-old children who were observed to be successful in forming the plural form on novel nouns (Zapf & Smith, 2007).

Monolingual children's comprehension of plural morphology has not received as much scholarly attention as its production. However, it poses importance based on the assumption that the children may have developed a perception before they produce the target inflection. This assumption that comprehension occurs earlier than production and nominal inflectional morphology is acquired later than verbal inflection was supported by the results of the research conducted on 40-month-old children (Fraser, Bellugi, & Brown, 1963). The tasks utilized suggested that word recognition of the children and the time that took them to recognize the word gained significance in further research (Swingley, Pinto, & Fernald, 1999). The children between 19 and 24 months of age were shown pictures and directed to look at the pictures of either singular or plural objects. Research using this task provided contradictory results.

In addition to behavioral tasks, online experiments gained importance in studying the acquisition of plural morphology. In recent work, the comprehension of the English plural inflection by two-to-three-year-old children was explored in an eye-tracking study (Kouider, Halberda, Wood, & Carey, 2006). The eye movements of the child participants were tracked in a task that included visual representations of novel words. Their responses were considered accurate if the children glanced at the matching visual. It was reported that two-year-old children managed to differentiate between the singular and plural nouns while 20-month-old participants failed to tell the difference. Although their task included plural

items ending with English plural allomorphs, Kouider et al. (2006) did not examine the acquisition of the plural allomorphs in the scope of their research. However, the allomorphs of the English plural marker, [s], [z], and [əz], play a significant role in the monolinguals' acquisition of the plural morphology. Davies, Xu Rattanasone, and Demuth (2017) found similar results in their study which was carried out on 2-year-old children using an eye-tracker. They revealed that the child participants demonstrated sensitivity to the [s] allomorph of the English plural morpheme while they performed poorly in producing the [z] allomorph. It was interpreted that the [s] allomorph attracted the participants' attention for its longer period in the audio recordings, regardless of its less frequency compared to the [z] allomorph. Although toddlers did not perform successfully in noun endings with the [z], and [əz] allomorphs, they did demonstrate comprehension in words ending with the [s] allomorph.

The acquisition of plural morphology in languages other than English was also investigated. For instance, German plural morphology differs from English since German accommodates seven variations of plural markers to pluralize a noun (e.g., *-e*, *-e* with umlaut, *-er*, *-er* with umlaut, *-n*, *-en*, *-s*). German-speaking child participants aged between 2;6 and 6;0 demonstrated a variation of plural markers on nouns in their speech, depending on the extent to which the noun allows the plural form. That is to say, the children demonstrated sensitivity to the plural markers as the productiveness of the noun increased (Laaha, Ravid, Korecky-Kröll, Laaha, & Dressler, 2006). In a longitudinal study, Danish-speaking children's acquisition of the plural morphology was observed until their tenth birthday (Kjarbak, dePont Christensen, & Basbøll, 2014). The results of the study were correlated with the German sample discussed above. It was reported that both German- and Danish-speaking children's productions of the plural marker on nouns highly depended on the productiveness of the noun, and that the children tended to overgeneralize pluralization on irregular plural markers at younger ages.

Regarding the age variant, research showed that children produced the plural more accurately as they got older despite the decrease in its productivity (Kjarbak, dePont Christensen, & Basbøll, 2014). In a study testing the acquisition of plural inflection on nouns in Palestinian Arabic in feminine and broken plural entities, the productions of 3 groups of child participants, aged 3;0, 5;0 and 7;0, were examined through three tasks in which they were asked to repeat the plural forms, to produce plural nouns with a Wug-like test (Berko, 1958) and to produce plural nouns in a game with their peers (Saiegh-Haddad, Hadieh, & Ravid, 2012). The researchers reported that the occurrence of plurals improved around the

age of 5, yet the children did not gain competency in producing the plurals at the age of 7. Furthermore, the regular plurals were found to be acquired earlier than the irregular plurals by L1 Palestinian Arabic children.

Besides the morphological characteristics, the phonology of the plural morpheme in different dialects of languages has a significant role in children's acquisition of plural inflection. Spanish and English have the same plural morpheme *-s*, but the pronunciation of the Spanish plural morpheme *-s* varies upon the Spanish dialects (Lipski, 1984). The effect of phonological variability of the Spanish plural morpheme was examined with two groups of child participants aged between 3;6 and 6;0 acquiring Chilean and Mexican dialects of Spanish (Miller & Schmitt, 2014). The Mexican children were reported to have been exposed to the language on a more frequent and consistent basis than the Chilean children have. Similarly, the study results demonstrated that the Mexican children performed far better than the Chilean children. This finding suggests that the input abundance is an effective factor in children's production of plural morphology. In terms of dialects of languages, both Austrian dialect of German (Laaha, Ravid, Korecky-Kröll, Laaha, & Dressler, 2006) and Palestinian dialect of Arabic (Ravid & Hayek, 2003) require longer time for the children to properly develop mastery in pluralization, which may carry on until they start kindergarten. However, similar to Turkish-speaking children, Hungarian-speaking children are reported to be competent in producing the plural morpheme as early as age 2;3 (Bayley & Langman, 2004).

After reporting research findings with respect to the acquisition of plural morphology in the mother tongue, we now present research findings on plural inflectional morphology in the second language acquisition literature.

3.3.2 Second language acquisition of plural inflectional morphology

The acquisition of the English plural forms has been investigated in second language acquisition (SLA) literature with special attention given to variability across languages. The morphological variability in terms of number marking has been studied and contrasted in many languages such as Turkish and Western Armenian (e.g., Bale, Gagnon, & Khanjian, 2010) and Hungarian and English (e.g., de Swart & Farkas, 2010). Among the SLA research that examined the role of variability in the acquisition of the plural morphology, one study conducted on L1 Chinese and L2 English learners (n=12) by Young (1991) stands out. He utilized a variable rule perspective in his study and reported that the acquisition of English plural morphology demonstrated differences in regard to learners' language competence, semantic properties of the sentences and morphological constraints on plural marking.

The findings of the study conducted by Young (1991) was reexamined by Kato, Adamson, Unenaka, Stauffer and Chu (1999) with Japanese speaking L2 English learners. The researchers sought to reveal the parameters that affected the variability of the plural inflectional morphology in second language acquisition. To this end, they collected the data from individual interviews with the participants. Their findings were in line with Young (1991) in that learners' acquisition of the plural inflectional morphology is highly dependent on the features of their first languages. They stated that the native language plays an indispensable role in the acquisition of inflectional morphology in the second language.

More recently, the variability of English plural morphology have been studied with Japanese participants (Mansbridge & Tamaoka, 2018). Since Japanese does not use overt plural marking, the study was constructed to examine the sensitivity to plural agreement of the Japanese speaking L2 English learners. The data was collected through a task where the participants were required to put the words of a sentence in the correct order and create a grammatically correct sentence. It was reported that L1 Japanese-L2 English participants with both low and high proficiency levels demonstrated sensitivity to plural morphology. It was interpreted that sensitivity to the violations could provide significant results for the SLA of plural morphology.

In addition, phonological variability is observed in L2 due to the constraints posited by L1. For instance, the phonological difference between Brazilian Portuguese and English was studied with L1 Brazilian Portuguese and L2 English speakers (Silva & Mendes, 2022). The data was collected using two sequential tasks in which the participants described the pictures using numbers and read aloud the task items. It was revealed that the L1 Brazilian Portuguese-speaking participants found it difficult to articulate the allomorph [z] and this was attributed to the fact that their first language does not accommodate this sound in the word-final position.

Bilingual children⁴ have been observed to omit or overuse the plural morpheme. Such variability has been attributed to several reasons (Papadopoulou, Varlokosta, Spyropoulos, Kaili, Prokou, Revithiadou, 2011). The substitution of morphological elements in the second language has been attributed to the lack of functional categories (Vainikka & Young-Scholten, 1996), the mapping problems with morphology on the surface level (Haznedar &

⁴ In this paper, we use 'bilingual children' to name child participants who can be characterized as successive /sequential bilinguals or child L2ers. See Schwartz (2003) and Meisel (2011) for definitions of child L2 learners and simultaneous bilingual children.

Schwartz, 1997), or the lack grammatical correspondence in the learner's first language (Tsimpli & Dimitrakopoulou, 2007).

L1 children differ from early child L2ers in that the amount, intensity and consistency of exposure to the target language; thus, the time required for L2 children to gain proficiency in the second language is relatively longer. As aforementioned, the dissimilarity between L1 and L2 morphological systems is claimed to have an impact on the L2 learner's pace in acquiring inflectional morphology. It is observed and reported in the acquisition studies that L2 learners tend to demonstrate alike behaviors with other L2 learners in their first language (Jiang, 2007). Most second language acquisition studies have focused on L1 interference (Ellis, 2006; Slabakova, 2014). Therefore, the first language of the L2 learner should be given importance in order to have a better understanding of their acquisition process. In this section, studies related to child learners' acquisition of L2 English plural morpheme will be presented with a reference to the participants' native languages.

A study conducted by Lightbown (1983) detected L1 influence in L2 English plural morphology productions by L1 French participants. The study results demonstrated a significant difference in the correct productions between the plural morpheme –s and other morphemes in English and this difference was devoted to the fact that French phonology does not allow the pronunciation of the sound –s in the word final position.

Xu Rattanasone and Demuth (2022) conducted a study with L1 Mandarin-L2 English child participants aged 3;5 and tested their acquisition of plural morphology in the second language through imitation, production and comprehension tasks. Their study, which was adapted for the current study, revealed that the children could repeat the sentences that included plural nouns successfully in the imitation task, but they did not perform that successfully in the production and comprehension tasks. It was interpreted by the researchers that L1 Mandarin-L2 English child participants have not developed language competency in the second language to produce and comprehend the plural inflectional morphology. Furthermore, it was suggested that second language learners may benefit from being exposed to the language to build competency to produce and comprehend the plural morphology.

Another study compared the L2 English plural morphology acquisition of L1 Chinese children with children who spoke other languages (i.e., Afrikaans, Armenian, Bengali, Farsi, Filipino, German, Gujarati, Hindi, Italian, Japanese, Korean, Kurdish, Malayalam, Marathi, Polish, Punjabi, Romanian, Serbian, Sinhala, Spanish, Swiss German, Tamil, Thai, Turkish) as a first language (Xu Rattanasone, Davies, Schembri, Andronos, & Demuth, 2016). All the child participants, including the L1 English child controls, were 48

months old on average. The task consisted of 72 singular and plural novel words. The performance of L1 Chinese children was reported to be slightly above average in both singular and plural test items while children in other L1 groups demonstrated a better performance on the plural items. It was concluded that age and exposure duration had a great impact on the acquisitional patterns of plural morphology for children learning English as a second language.

One other study investigated the acquisition of the plural morpheme by a Japanese child learning English as an L2. After being exposed to English for seven months, the five-year-old child supplied the plural morpheme with an accuracy rate of 60% even though Japanese does not overtly mark plural on nouns (Hakuta, 1978). In a similar vein, ten Chinese children were involved in longitudinal research which examined their acquisition of the plural marker in L2 English (Jia, 2003). The participants' age ranged from five to sixteen. They were exposed to the English plural morpheme for 5 years for they were immigrants to an English-speaking country and the researchers observed them regularly during this period. The data collection consisted of picture descriptions and spontaneous speech productions. It was concluded that seven of the participants manifested error-free production of the plural morpheme in L2 English after 5 years.

Similar to the Chinese speaking children, Korean speaking child learners of English have been reported to struggle with producing English plural morphology and exhibited morpheme deletions at higher rates in the elicited spontaneous speech production tasks (Shin & Milroy, 1999). The results were attributed to the morphological systems of their native languages. Since neither of these Asian languages consists of any overt plural marker, the effect of L1 was claimed to be existent on the productions in the target language, English. Lardiere (2009) discusses that L2 acquisition is influenced by the features of languages by presenting examples from Mandarin, Korean and English in which the rules for pluralization and the plural morpheme vary greatly. She states that the plural feature is distinct from one another in these languages; therefore, L1 and L2 combinations of these languages will not require feature transfer of the plural form from the native language. On the other hand, the omissions of the target inflection in the L2 has been attributed to the MSIH suggesting that learners struggle with the morphology on the surface level thereby refusing the possibility of any functional failures (Haznedar & Schwartz, 1997).

Bosch and Foppolo (2023) investigated the processing of plural nouns with L1 Italian-L2 English children on two consecutive tasks using an eye tracking experiment. The child participants were shown two visuals and they looked at the pictures guided by a

listening track. The aim was to explore whether the participants would foresee the nouns based on plural marking or subject-verb agreement in both languages. The researchers reported that children detected the nouns based on the agreement of number in both languages despite their lower performance in English. Besides, the increased rate of English proficiency resulted in high similarity to the native control group in terms of second language processing of the plural morphology.

Apart from L2 English, the acquisition of the plural morphology has been studied with child participants learning different languages. For instance, the children's development of plural morphology on irregular nouns in Hebrew was examined with successive bilingual children who spoke Russian and Hebrew with 2 years of age of onset, and their responses were compared with their L1 Hebrew monolingual peers. It was reported that successive bilingual children performed less accurately in the productions of the plural inflection on irregular nouns; however, both the study and the control groups demonstrated improvement in the pluralization of irregular nouns significantly (Schwartz, Kozminsky, & Leikin, 2009).

L1 and L2 acquisition patterns were compared in a study conducted with three child participant groups: children who acquired French as a second language, simultaneous bilinguals who acquired L1 French and L1 Swedish, and L1 French monolingual children (Granfeldt, Schlyter, & Kihlstedt, 2007). The age of the participants ranged from three to six. The results demonstrated that the children who acquired only French as their first language and the children who acquired French and Swedish as their first languages demonstrated similar results. However, the children who acquired French as a second language produced different error types and followed different developmental patterns than the other groups. The research results supported the prediction of first language influence on the second language acquisition process.

The acquisition of L2 plural morphology has been studied on adult learners of different L1 backgrounds. Jiang, Novokshanova, Masuda, and Wang (2011) examined plural formation of Russian (n=24) and Japanese (n=26) learners of English as an L2 through a reading task. The reading task required the participants to read all the words carefully without a time limitation. The L1 Russian participants' performance was at ceiling, which was interpreted as a developed sensitivity to the errors in plural morphology in the target language, whereas the L1 Japanese participants did not distinguish a significant number of errors in the text. Lim and Christianson (2015) conducted a study to explore sensitivity to plural morphology of Korean speakers of L2 English (n=36). The researchers tracked the eye movements of the adult participants in 2 reading tasks one of which was followed by

comprehension questions and the other by an oral translation into Korean. It was reported that Korean speakers of L2 English demonstrated higher levels of sensitivity to errors in plural morphology in the translation task than in the comprehension task. The finding suggested that the increasing complexity of the task triggered the adult learners to spot the violations and to show sensitivity to the errors. Diverting from L2 English, to maintain our presentation of the previous research related to the acquisition of plural marking, it will be informative to touch upon the data obtained from adult participants across languages. Spinner (2013) conducted a study on twenty-year-old university students (n=38) who were English speakers learning Swahili as a second language. She tested their gender and number acquisition patterns in L2 Swahili through an elicited production and a written task. In terms of the acquisition of the number category, the participants distinguished the plural forms successfully, while they had difficulty in producing the correct plural forms in the elicited production task. In light with the FRH predictions, the results showed that the incompetence in the number acquisition of the participants was devoted to the fact that their first language plural inflection differed from Swahili.

Hwang and Lardiere (2013) examined the acquisition of the Korean plural marker with adult subjects who were native English speakers (n=77) classified into 4 groups of proficiency in Korean. The plural marking in Korean has more ways of usage; therefore, it can be stated that English plural marking is less implexuous than the Korean plural inflection. In line with the dissimilarity between two languages, the researchers detected that the participants acquired the Korean plural features that are more similar to English more easily and quickly. However, they struggled learning the usages that are distinct from their first language. These findings were in line with the previous research. Similarly, English and French speaking Spanish learners demonstrated competence in plural forms that have similar usage to their native languages (White, Valenzuela, Kozłowska-Macgregor, & Leung, 2004).

Further work on plural morphology was conducted on Chinese learners of Spanish as an L2 (n=26). The participants' (aged 20-24 years) sensitivity to sentence-initial and sentence-medial plural morphology violations on two sentence structures was examined through electroencephalogram (EEG) (Dowens, Guo, Guo, Barber, & Carreiras, 2011). It was concluded that the participants demonstrated sensitivity to such violations equally across sentence structures even though different from Spanish, Chinese does not accommodate plural marking based on the number and gender. Similarly, the acquisition of the L2 English plural morphology by an L1 group whose first language does not

accommodate similar plural marking system – Korean, was studied by using a reading task with comprehension questions (Song, 2015). The decreased pace in participants' reading was attributed to their sensitivity to the plural morphology violations inserted into the texts. The results demonstrated that the participants demonstrated high levels of sensitivity to plural errors since the inflectional system of Korean did not have the equivalent feature in English.

The presence of universal common features in plural inflections and the extent they facilitate second language acquisition have been also studied. Lee and Lardiere (2016) conducted two experiments of three mechanical tasks on L1 Indonesian-L2 Korean (n=70) and L1 Korean-L2 Indonesian (n=61) adult participants. The aim was to examine whether the differences in the L1 and L2 semantic systems is the main effect that increases the complexity of the acquisition of the plural morphology in the target language. The researchers explained that Korean and Indonesian meet on common grounds in regards to the most of the plural inflectional features with some minor distinctions. However, the participants' acquisition demonstrated an asymmetry. That is, L2 Korean participants demonstrated improvement in their use of the plural marking; however, their rate of accuracy was not close to the level of the L1 Korean control group. On the contrary, L2 Indonesian participants demonstrated higher accuracy in the target language, but their performance was slightly lower than the L1 Indonesian control group. The researchers revealed a link between the L1 influence on the L2 acquisition of plural morphology in spite of the significant number of similarities between the two languages.

Most of the research conducted on the nominal domain meets on the common ground that the acquisition of plural morphology occurs with relative ease by learners who acquire Turkish as a second language (e.g., Haznedar, 2006; Papadopoulou, et al., 2011). The contribution this dissertation makes to the field is that it is among the very few studies that investigated the acquisition of plural morphology by Turkish children learning English as an L2. This study attempts to fill this gap in the literature to gain insight in the struggles that Turkish morphophonology poses on L2 learners of English.

3.4 Conclusion

This section focused on the prominent approaches that account for the role of first language and UG accessibility in the L2 acquisition to build a solid theoretical framework for the present study. First, within the FAFT accounts the Feature Reassembly Hypothesis and Missing Surface Inflection Hypothesis were discussed. Second, a review of literature was presented with respect to the acquisition of plural inflectional morphology in first and second

language acquisition. The next section will be dedicated to a detailed discussion of the methodology employed in this thesis.



CHAPTER 4. METHODOLOGY

4.1 Introduction

This chapter includes the methodological design that was followed in the study. Recall that this experimental study aimed at examining the production and comprehension of L2 English plural inflectional morphology by Turkish-English bilingual and biliterate seven-year-olds across three tasks. In the next subsection, the design was explained in detail. It was followed by the data collection procedure in section 4.3. The demographic characteristics and personal information of the participants involved in the study were reported in detail in subsection 4.4. Then, the data collection instruments were explained in subsection 4.5., and all three behavioural tasks, namely, elicited imitation, elicited production, and comprehension tasks, were presented elaborately. Research questions and related predictions were presented in subsection 4.6. Data coding and analyses were provided in subsections 4.7. and 4.8. Finally, the methodological framework was thoroughly summarised in subsection 4.9., the conclusion part. Now, I will start with the design of the study.

4.2 Design

The design of this study was experimental, and the stimuli were adapted from Xu Rattanasone and Demuth (2022). The study participants were recruited through convenience sampling and were repeatedly measured across each of the three conditions. Therefore, within-subject factors were the sequence of conditions implemented to the participants. The within subject design offers certain advantages as it can be used with smaller sample sizes with little or no error variance concerning individual differences between conditions if the participants are randomly exposed to each condition (Edmonds & Kennedy, 2017). This is in line with the design of this thesis.

The study comprises two within-subject factors on several accounts: the number of words, namely singular and plural forms, and plural coda types—singleton coda /z/, coda cluster /ks/ and syllabic coda /əz/. First, the presence of words that already exist in English along with the novel words that participants had never encountered with were used in order to gauge plural morphology. Second, three plural coda types together with the plural allomorph types (segmental [s], [z] and syllabic [əz]) were used in categorising the nouns and shaping the content of the tasks. Consequently, the item distribution was carried out

elaborately by addressing both dimensions of the two within-subject factors. Next, I will continue with the data collection procedures.

4.3 Data Collection Procedures

After taking the necessary ethics clearance from Izmir Democracy University Board of Ethics (ID: E-35950415-604.01-22050) (See Appendix A), the necessary permissions were taken from the primary school administration, parents, and the child participants. Next, the parents were sent a questionnaire to obtain demographic information related to the child's age, exposure to and dominance in L2 English, the language environment in the household, and the level of education of the parents (see Appendices B and C).

The three experimental tasks were carried out at a private school in Turkey during the 2021-2022 spring semester. The testing sessions took place on the school campus in a quiet room allocated for the researcher. Each participant was tested one-on-one by the researcher who got seated next to the child at a desk where a computer, a professional voice recorder and a box of chocolates were placed. The professional voice recorder was used in standard sample rate at 44.1 kHz in order to record the child responses effectively. All three tasks were carried out subsequently, and the items in each task had been randomized before the onset of the experiment.

Throughout the data collection, the researcher ensured that the children felt comfortable and were engaged with the tasks throughout the tasks. When the child entered the room, they were greeted warmly by the researcher and were led to the desk. After a small chat with the participant, the researcher stated that they would play a fun game in English and could stop playing it if they were bored. The children were informed that their performance on the tasks would not be graded to ensure that the participants behaved as naturally as they could when they were playing a game with their peers. The positive relationship between the participants and the researcher was maintained to have a productive data collection process. The students were guided during the task and praised for their attention at the end. The children were praised and awarded with chocolate for their participation in the tasks.

The child participants were tested first on the elicited imitation task, next on the elicited production task and finally on the comprehension task. A similar procedure was followed across the three tasks. In the elicited imitation task, the participants were shown pictures on a slide show and were asked to repeat the audio recording that matched the image

on each slide in the way they heard them. A female native speaker of American English recorded each item in child-directed speech in the elicited imitation and comprehension tasks. The task took around 15 minutes for each participant.

The second task, the elicited production task, required the child to produce the plural forms of the words shown on flashcards which were plastic coded for durability. Each child participant was shown two flashcards that demonstrated the visual of a singular item and multiple items and requested to produce the plural form. In the first flashcard, they heard a sentence such as: “This is a dog” uttered by the researcher. Next, the child was shown another card with a picture with multiple visuals of the target noun and heard a sentence such as: “These are...” with a rising intonation uttered by the researcher. The child participant was expected to generate the plural noun as the sentence ends. The children were provided with three chances to articulate the correct answers. This task lasted around 5 minutes for each participant.

The comprehension task was carried out on a different day following the same procedure as in the other tasks. Unlike the previous tasks, in which the participants dealt with the already existing nouns and visuals, the comprehension task included phonetically focused novel words with two alternative forced choices (2AFC). In the preparation of the task, the images of the novel words were taken from a game called Glitch (Pickard, 2012). The game has no longer been streaming; however, the images of the characters were released into the public domain with licence. The visuals of the game characters and further information can be accessed from <https://www.glitchthegame.com/public-domain-game-art/>. All images were graphic cartoon characters, and suitable for children. The visuals were carefully chosen among the character pictures of the game and each of them was matched with a novel word. The recordings were attached to the slides which made it easier and quicker to play during the application of the task. Each child was shown a PowerPoint presentation created by matching the pictures with the audio recordings. Each slide was divided into two: one side with a single visual and one side with multiple images of a novel word. In a typical session, the child heard a sentence with a novel noun such as “Touch the *mib*” and pointed at one of the two pictures presented on the slides. This task lasted around 15 minutes with each participant.

The overall testing procedure, in other words, the completion of three tasks, took no more than 35 minutes for each child who was tested individually. The overall testing procedure was audio-recorded, and the sound files were saved anonymously. All the audio-

recorded child responses were transcribed, and the sound files were exercised and coded for patterns of use (see section 4.7. for data coding) using the software Praat (Boersma & Weenink, 2023) for further statistical analyses (see section 4.8. for the data analysis). The overall data collection process took a week (see 4.5. for a detailed discussion of the tasks). Below you can find the section on participant recruitment and demographics.

4.4 Participants

Data came from 30 children from two first-grade elementary school classrooms in a private school in Turkey, catering for students from kindergarten to grade 12⁵. A total of 40 seven-year-old Turkish-English bilingual children were tested; however, 10 were excluded from the study due to distraction, unwillingness, and failure to complete the tasks⁶. As a result, the data from 30 students who completed all the three tasks were included in the statistical analysis of this study. The participants had no reported hearing or language impairment. Table 1 illustrates the demographic information of the participants' language exposure and dominance outside the classroom environment:

Table 1

Demographic characteristics, language exposure and dominance of the participants

Demographic Characteristics	n	%	M	SD
Gender				
Female	13	43%		
Male	17	57%		
Age				
Age (year; month)			7;3	2.39
Language exposure and dominance				
Age of first exposure to English (year; month)			3;4	0.89
Languages				
Turkish (100%)	18	60%		
Turkish (90%), English (10%)	5	17%		
Turkish (60%), English (40%)	7	23%		

⁵ The Ministry of National Education in Turkey determines the suitable age of students to enrol compulsory elementary school in a particular stage. The enrolment to the first grade requires the completion of 69 months of age for primary school children before the ninth month (MoNE, 2014).

⁶ Initially, the targeted participant group was kindergarteners, ten of whom were given the pilot study. However, the study experiments did not work with this group since none of them was able to complete the task.

As Table 1 presents, data from 13 female and 17 male child participants with an average age of seven years, and three months were entered into data analysis. The parents of the 18 participants reported that the dominant language used at home was Turkish. 5 parents reported that they used 10% English along with 90% Turkish at home. The percentage of English used at home was higher in 7 of the families with a ratio of 40% and the percentage of Turkish was lower at 60%. It can be inferred that the students were exposed to English at similar rates outside school.

The private school where the data were gathered offered an intensive language program in English, including extracurricular activities such as drama clubs, speaking-focused lessons, and movie hours. School administration and parents worked collaboratively in order to improve the quality of the English instruction at school, and particular importance was given to the language improvement of these children starting to learn English as a foreign language in early years. The children started to read and write in Turkish in the fall semester and English in the spring semester. All the first graders had English classes as a part of the national curriculum and followed a main course book, a four-skills book and reader books for young L2 learners. Their English classes were 10 hours a week, 6 of which were instructed by a native speaker of English and 4 by a bilingual English teacher. They used the Thumbs UP! second edition (Fash, 2020) practice book and students' book as the main course book; the Rise and Shine Level 1 (Drury, 2021) as the skills book. Rather than carrying out a traditional lesson plan, the English teachers designed and implemented real-life activities, including drama, role-plays, and games to introduce English in real life contexts. The children were encouraged to speak English during lunchtime and short breaks, and they were observed by a hall monitor teacher who was entitled to maintain daily conversation in English to help the children speak more independently.

The child participants came from families with similar educational and socio-economic backgrounds. Table 2 below demonstrates the parental demographic information:

Table 2

Educational and linguistic background of the participants' parents

Parents' Background	Mother		Father	
	n	%	n	%
Education				
High school	1	3%	1	3%
Bachelor's degree	11	37%	4	13%

Master's degree	11	37%	15	50%
PhD	7	23%	10	33%
Native Language				
Turkish	30	100%	30	100%
Other languages				
English				
Beginner	3	10%	2	7%
Intermediate	15	50%	16	53%
Advanced	4	13%	3	10%
German				
Intermediate	1	3%	1	3%

As given in Table 2, the child participants came from families where both the mother and father were native Turkish speakers, all born and raised in Turkey. 23% of the mothers held a Ph.D., 37% a master's degree, 37% a bachelor's degree and 3% of them had a high school diploma. On the other hand, 33% of the participants' fathers held a Ph.D., 50% a master's degree, 13% a bachelor's degree and 3% had a high school diploma. The parents' second languages included English and German. Depending on their self-perceived level of proficiency in a foreign language, a mother and a father in the group were intermediate level German speakers. 10% of the mothers spoke beginner-level English, 50% spoke intermediate-level English, and 13% spoke advanced-level English. On the other hand, 7% of the fathers spoke beginner-level English, 53% spoke intermediate-level English, and 10% spoke advanced-level English. The remaining 7 mothers and 8 fathers stated that they did not speak a second language. The next section is dedicated to a thorough discussion of the main testing tool used in the study.

4.5 Data Collection Instruments

Xu Rattanasone and Demuth (2022) generated three experimental tasks which were adapted for this study. In the following subsections, the experiments and the items were explained in detail. All the items on the experiments were randomised and were introduced with training items to familiarize the children with the task. The elicited imitation and elicited production tasks aimed at testing the participants' competency in producing the plural morphology first and then understanding whether they can produce the plural forms with a distinction of different sound patterns. The bottom line is that children of this age can understand the grammatical form and function in L2 English but may not become yet

competent in producing the words. This is because the comprehension phase may occur earlier than the production phase for these children. This difference is named as the receptive-expressive gap in the literature (Gibson, Peña, Bedore, & McCarter, 2022). The third task, the comprehension task, aimed at revealing a possible receptive-expressive gap through the child language acquisition process. Now, I will present detailed information about the tasks used in this study.

4.5.1 Experiment 1: Elicited imitation task

In phonetics, a coda is the final part of a syllable (Zamuner et al., 2005). For instance, the word case /*keɪs*/ ends with a singleton coda, /*s*/, whereas the word axe /*æks*/ ends with a coda cluster /*ks*/ . The first experiment was an elicited imitation task aiming at producing mono-and-bimorphemic words to examine whether coda complexity in terms of singleton coda /*z*/ (e.g., nose /*nəʊz*/), coda cluster /*ks*/ (e.g., box /*bɒks*/), and syllabic coda /*əz*/ (e.g., houses /*ˈhaʊzəz*/) would result in differences in accuracy. The items were provided in the sentences to make the task more meaningful, and the sentence length was limited up to 5 syllables to eliminate memory-related issues. To familiarise the children with the task, they were presented with two trial items such as cat /*kæt*/ and rose /*rəʊz*/ followed by the main testing items such as box /*bɒks*/, bees /*bi:z*/, houses /*ˈhaʊzəz*/, rose /*ˌrəʊz*/, and cakes /*keɪks*/ . The repetition of the same items for different tasks was provided with the aim of testing different conditions. The conditions in the elicited imitation task and the visuals used during the data collection process are presented and explained below.

4.5.2 Experiment 2: Elicited production task

Since the participants may repeat the sentences that they hear and may perform well due to their language knowledge or ability to keep the information in their short-term memory in the sentence imitation task, a further study was needed to better understand whether the participants were actively involved in the process, or they simply imitated the items in the first task. The elicited production task aimed at revealing the grammatical knowledge of the participants by addressing their rule making ability to form the plural words out of the singular ones. Thus, the participants were presented a more difficult set of coda clusters and syllabic words. This task evaluated the linguistic competence and grammatical knowledge of the participants by directly giving them the opportunity to form the plural rule.

Table 3 includes test items along with their phonetic transcriptions according to International Phonetic Alphabet (International Phonetic Association, 1990), and a sample illustration of the stimuli is given in Figure 1.

Table 3

Sample items with phonetic transcriptions for the elicited production task

Coda	Number	Item	IPA
Cluster	Plural	ducks	/dʌks/
Cluster	Plural	cakes	/keɪks/
Cluster	Plural	rocks	/rɒks/
Syllabic	Plural	horses	/hɔːsəz/
Syllabic	Plural	houses	/haʊsəz/
Syllabic	Plural	roses	/rəʊzəz/

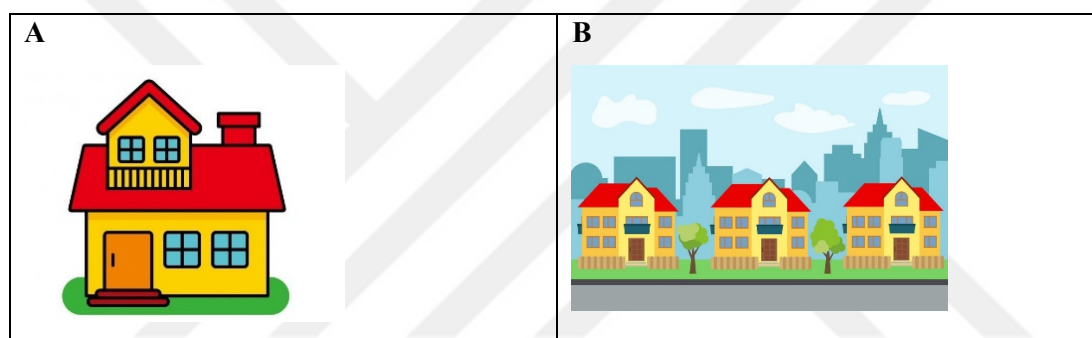


Figure 2. A sample illustration of the stimuli used in the elicited production task.

Note. The stimuli shown in the figure is a cartoon house that represents the singular or plural form of the noun (see A). The participants heard the researcher saying, “This is a house.” The multiple illustrations of the house were used in demonstrating the plural form (see B). The researcher asked the participants to form the plural by giving the prompt, “These are...?”.

The frequently used nouns in child speech for cluster plurals and syllabic plurals were chosen for the task. 5 items for cluster plurals and 5 items for syllabic plurals were utilized. The nouns for cluster plurals and syllabic plurals were used in the sentences that included up to 5 syllables. When determining the nouns, the simplicity and the frequency of the words and the students’ familiarity with the real objects were taken into consideration. The participants were expected to form the plural of the noun that they had heard the singular form of from the researcher.

4.5.3 Experiment 3: Comprehension task

The third and the last task of the study, the comprehension task, was based on the possibility that the Turkish speaking children may have developed the comprehension of plural morphology in L2 English even though they may still be unable to produce plural

forms with perfect accuracy. The previous research carried out with monolingual language learners have demonstrated that novel words can be correlated with segmental plurals (i.e., [s], [z]) after the age of two, however, it takes more than one year for young learners to relate the novel words with syllabic plurals (i.e., [əz]) (Davies, Xu Rattanasone, Demuth, 2017, 2020). There is a void in the literature in terms of carrying out a comprehension task including plural novel nouns on Turkish speaking school-aged child L2 learners of English.

The list of novel words was formed in terms of the number factor as being singular and plural and the allomorph type factor as segmental and syllabic allomorphs. The beginning of the task was supported by trial items with the aim of having the participants become familiar with the novel nouns. The novel nouns were visualized with game characters as mentioned in the data collection procedure subsection. In order to reduce distractions, only the pictures with positive effects and bright colours were included in the task. They consisted of nouns and pictures that students frequently saw in their daily lives and their visuals were also carefully selected and included in the task.

At the beginning of the test, the first 4 slides included the training items. These items also represented the aim of the task and were chosen from simple words that the participants were most likely to have encountered before. Thus, 4 training items ending with the segmented allomorph /s/ were included for 12 novel items in that category and 3 filler items ending with /əz/ were included in the syllabic allomorph category for 12 novel nouns. The filler items were placed at the beginning of the task first, and then they were shown to the children after every 4 items during the task. Each filler and novel word were presented in a sentence, therefore the participants heard instructions such as “Touch the *bips*” or “Touch the *noop*”. The aim was to maintain the students’ attention as well as to help them feel more engaged by seeing real life like items.

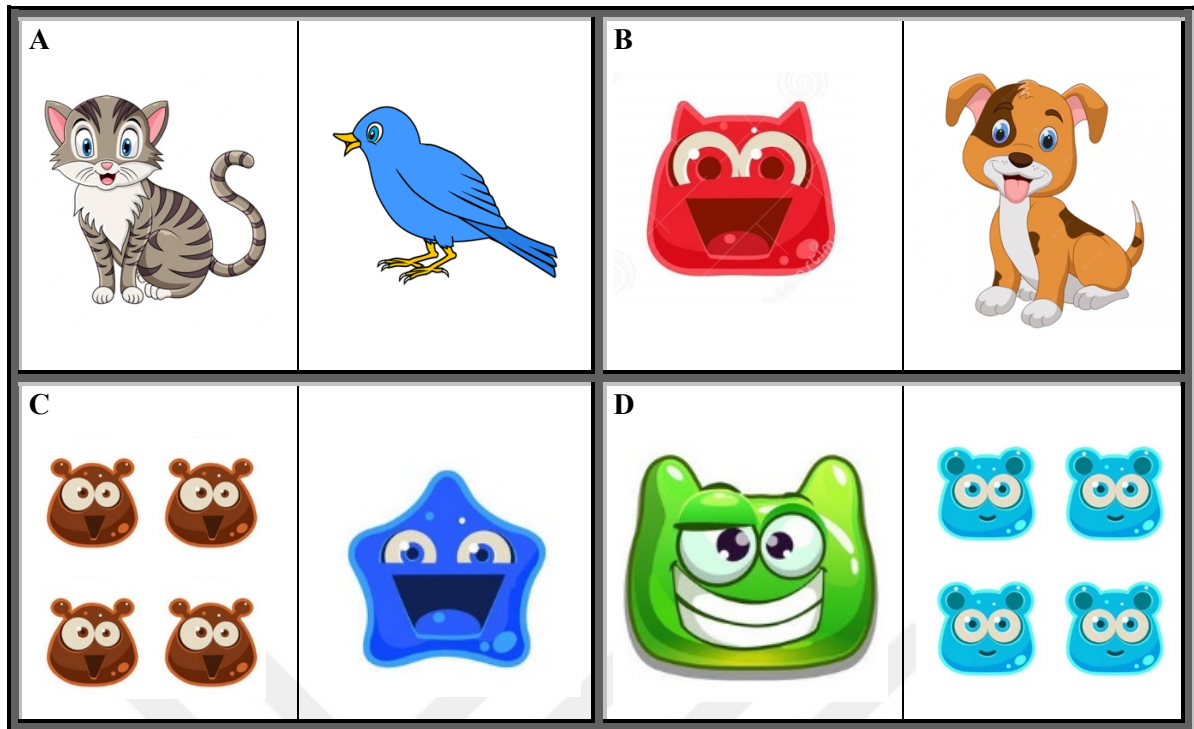


Figure 3. Sample illustrations of the stimuli used in the comprehension task.

Note. The stimuli shown in the figure included the trial items with illustrations of real animals (see A), the following test items including one filler and one novel word to make the participants familiar with the novel words (see B), the illustrations that corresponded to the novel words and directed the participants to point at the plural items (see C and D).

4.5.3.1. Comprehension task: condition 1

The first condition of the comprehension task examined whether the participants would be more accurate in their productions of segmental singular words than in segmental plural words. To this end, the stimuli included 6 singular (e.g., tep /*tep*/) and 6 plural novel words (e.g., teps /*teps*/) of segmented allomorphs which matched the visuals. Table 4 demonstrates the novel words used in the stimuli to test the condition.

Table 4

Sample items with phonetic transcriptions for the comprehension task condition 1

Allomorph type	Number	Novel word	IPA
Segmental	Singular	dup	/dəp/
Segmental	Singular	tep	/tep/
Segmental	Singular	pab	/pæb/
Segmental	Plural	bips	/bɪps /
Segmental	Plural	mups	/məps /
Segmental	Plural	tibs	/tɪbz /

4.5.3.2. Comprehension task: condition 2

The second condition of the comprehension task tested participants' accurate productions of syllabic allomorph in singular words (e.g., giss /*gis*/) than syllabic allomorph in plural words (e.g., gisses /*gisəz*/). Therefore, a set of items for both categories were prepared for the stimuli. 6 syllabic singular novel words and 6 syllabic plural novel words were included and matched with the visuals. Table 5 presents the sample items with their phonetic transcriptions.

Table 5

Sample items with phonetic transcriptions for the comprehension task condition 2

Allomorph type	Number	Novel word	IPA
Syllabic	Singular	koss	/kɔs/
Syllabic	Singular	poss	/pɔs/
Syllabic	Singular	niz	/nɪz/
Syllabic	Plural	nasses	/næsəz/
Syllabic	Plural	dasses	/dæsəz/
Syllabic	Plural	kezzes	/kezəz/

4.5.3.3. Comprehension task: condition 3

The third condition of the comprehension task examined whether the participants would perform more accurately in their productions of segmental or syllabic allomorphs in plural words. For this purpose, 6 novel words in the segmented plural form (e.g., teps /*teps*/), and 6 novel words in the syllabic plural form (e.g., gisses /*gisəz*/) were prepared and matched with visuals for the stimuli. Table 6 presents the items with their phonetic transcriptions for condition 3.

Table 6

Sample items with phonetic transcriptions for the comprehension task condition 3

Allomorph type	Number	Novel word	IPA
Segmental	Plural	bips	/bɪps /
Segmental	Plural	mups	/mæps /
Segmental	Plural	tibs	/tɪbz /
Syllabic	Plural	nasses	/næsəz/
Syllabic	Plural	dasses	/dæsəz/
Syllabic	Plural	kezzes	/kezəz/

4.6 The Research Questions and Predictions

This experimental study investigated the role of sentential position and phonological complexity in the production and comprehension of plural morphology by early Turkish child second language learners of English. The research questions and relevant predictions are given below:

1. Is there an asymmetry in the rates of accuracy among the imitation, production, and comprehension tasks in the acquisition of L2 plural morphology?
 - a. If there is an asymmetry between the two modes, in other words, if there is a difficulty between form and function mapping, then the children are expected to perform more accurately in the comprehension task than in the imitation and production tasks.
 - b. If there is transfer from the children's L1 to the L2, then the children are predicted to produce more omission errors than substitution errors in the imitation and production tasks.
2. Does phonological complexity determine accuracy in the production of singular and plural morphology by Turkish child L2 learners of English?
 - c. If L2 learners struggle in phonology, the coda cluster /ks/ should be more difficult than the singleton coda /z/. Therefore, the children are expected to be more accurate in their productions of singleton codas (e.g., nose /nəʊz/) than in coda clusters (e.g., fox /fɒks/) in singular words.
 - d. If L2 learners struggle in phonology, the plural words ending with a coda cluster should be more difficult than the words ending with a singleton coda. Therefore, the children are expected to be more accurate in their productions of singleton codas (e.g., bees /bi:z/) than coda clusters (e.g., ducks /dʌks/) in plural words.
 - e. If L2 learners struggle to acquire plural inflectional morphology, the plural words should be more difficult than the singular words ending with a coda cluster. Therefore, the children are expected to be more accurate in their productions of coda clusters (e.g., fox /fɒks/) in singular words than coda clusters (e.g., ducks /dʌks/) in plural words.
 - f. If L2 learners struggle to acquire plural inflectional morphology, the plural words should be more difficult than the singular words ending with a singleton coda. Therefore, the children are expected to be more accurate in their productions of singleton codas (e.g., nose /nəʊz/) in singular words than singleton codas (e.g., bees /bi:z/) in plural words.

- g. If the frequency of the plural morpheme impacts the acquisition of L2 inflectional morphology, the children should produce the plural words ending with singleton codas more easily than the ones ending with the syllabic coda [əz]. Therefore, the children are expected to be more accurate in their productions of singleton plurals (e.g., bees /bi:z/) than syllabic plurals (e.g., horses /ho:lsəz/).
 - h. If the sentence position impacts the production, the production of the plural words placed medially should be more difficult to produce than the ones placed finally. Therefore, the children are predicted to be more accurate in their productions of plural inflections in the sentence-final position (e.g., Smell the *roses*) than in the sentence-medial position (e.g., The *roses* are pink).
 - i. If L2 learners struggle to produce the inflectional morphology, the inflection of the plural words ending with the syllabic allomorph [əz] should be more difficult than the plural words ending with a coda cluster /ks/. Therefore, the children are predicted to perform more accurately in inflecting plurals with a coda cluster (e.g., ducks /dʌks/) than syllabic plurals (e.g., horses /ho:lsəz/).
3. Does phonological complexity determine accuracy in the comprehension of singular and plural morphology by Turkish young child L2 learners of English?
- j. If L2 learners struggle to acquire the plural inflection, the plural novel words should be more difficult to comprehend than the singular novel words in terms of the segmental allomorphs [s] and [z]. Therefore, the children are predicted to be more accurate in their productions of singular novel words (e.g., tep /tep/) than plural novel words ending with a segmental allomorph (e.g., teps /teps/).
 - k. If L2 learners struggle to acquire the plural inflection, the plural novel words should be more difficult to comprehend than the singular novel words in terms of the syllabic allomorph [əz]. The children are predicted to be more accurate in their productions of singular novel words (e.g., giss /gɪs/) than plural novel words ending with a syllabic allomorph (e.g., gisses /gɪsəz/).
 - l. If the frequency of the plural morpheme impacts the acquisition of L2 inflectional morphology, the children should comprehend the plural novel words ending with a segmental allomorph [s], [z] more easily than the ones ending with the syllabic allomorph [əz]. Therefore, the children are predicted to be more accurate in their

productions of plural novel words ending with a segmental allomorph (e.g., *teps* /*teps*/) than plural novel words ending with a syllabic allomorph (e.g., *gisses* /*gisəz*/).

4.7 Data Coding

This experimental research is based on 3 sequential tasks and each task has a characteristic that complements the previous one. The data coding of the three tasks were conducted separately. For the data coding of the elicited imitation and elicited production tasks, the students' answers were recorded and transferred to a computer database as an mp3 sound file with a wav. extension. The sound (wav) file was uploaded to Praat (Boersma & Weenink, 2023) for narrow acoustic analyses. The acoustic coding process for both tasks will be explained in subsection 4.7.1.

The Comprehension task required the participants to click on the recording symbol, and to point the picture which they thought was correct. Therefore, on each trial, the participants had a 50% chance of accuracy for each item. The task did not involve acoustic coding since the participants were not required to produce sounds. The researcher simultaneously coded children's answers as correct or incorrect by the visuals they were demonstrated during the task.

4.7.1 Acoustic coding

The stimuli included three allomorphs of the plural marker –s, [s], [z] and [əz], and examined the participants' productions of plural coda types as singleton /z/, cluster /ks/, and syllabic /əz/. The participants were asked to pronounce a set of items in each task. All 30 participants accomplished to produce 100% of the trial, filler, and main test items. Two trained Praat users coded the data collected on the elicited imitation and elicited production tasks in order to ensure interrater reliability. All the items were cross-coded, and the reliability rate was calculated as .97. Accordingly, the interrater reliability in data coding was meticulously provided.

Two expert Praat (Boersma & Weenink, 2023) users conducted acoustic coding by the visual analysis of the sound waves and spectrograms for each coda type, singleton /z/, cluster /ks/, and syllabic /əz/. First, the visuals of the correct utterances for three coda types were identified, then the sound files from each participant were excised and uploaded to Praat to be inspected in terms of the coda type. The recordings were marked as either accurate, errors of substitution or errors of omission.

The acoustic coding of the singleton coda /z/ was carried out by examining the presence of frication noise after the vowel as given in the following spectrogram. Figure 3 demonstrates the soundwaves for the utterance of rose /ɹəʊz/ and it is seen that frication noise starts after the diphthong /əʊ/.

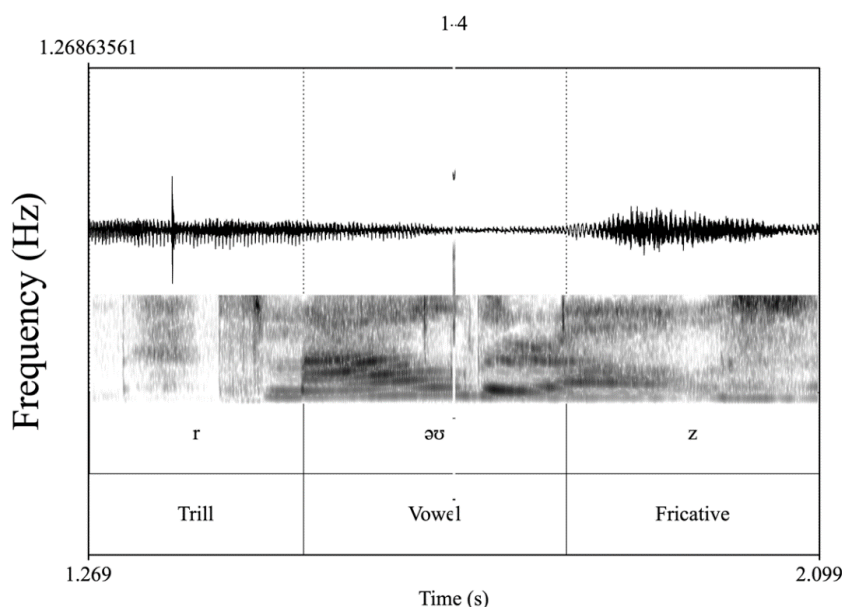


Figure 4. The frication noise for the presence of the singleton coda /z/, in the word *rose*.

As given in Figure 3, if the spectrogram did not include the frication noise, it was marked as an error of omission. Figure 4 demonstrates the omission of the singleton coda /z/ in the utterance of rose /ɹəʊz/.

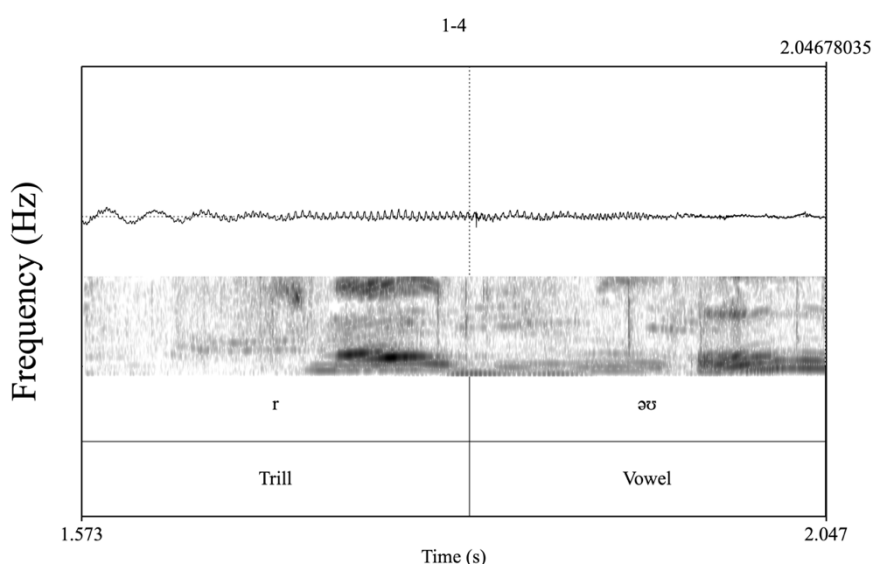


Figure 5. A sample production of the omission error type for the singleton coda /z/, in the word *rose*.

In the Figure above, it is seen that the fricative /z/ does not appear after the diphthong, therefore it is interpreted as the participant's omission of the singleton coda /z/. Similarly, if

the visual did not include the exact frication, it was marked as a substitution error. Figure 4 demonstrates the coding of an omission error of the singleton coda /z/. In Figure 5 below, the participant failed to utter the fricative /z/.

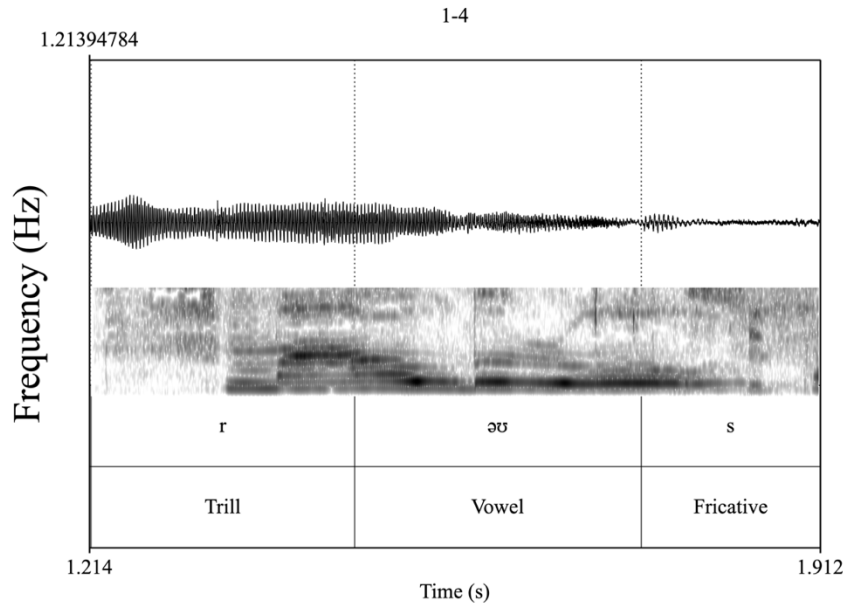


Figure 6. A sample production of the substitution error type for the singleton coda /z/, in the word *rose*.

In the figure above, the soundwave shows that the child uttered the /s/ sound after the diphthong. This incorrect utterance was marked as an error of substitution as the participant substituted the sound /z/ with the sound /s/.

The acoustic coding for the coda cluster /ks/ was conducted by examining the utterance visual by the presence of the plosive /k/ and the fricative /s/ concurrently. The occurrence of coda bursts⁷ in the plosive duration indicated the presence of /k/ sound which was followed by a frication noise with a short closure duration⁸. Figure 6 demonstrates the coda cluster /ks/ for the word *fox* /fɒks/.

⁷ Burst is the name given to the capture of the action that the sound is orally released (Duez, Ghio, & Viallet, 2021).

⁸ Closure duration is an acoustic feature that is used to detect the sound changes in the voice analysis (Stathopoulos & Weismer, 1983).

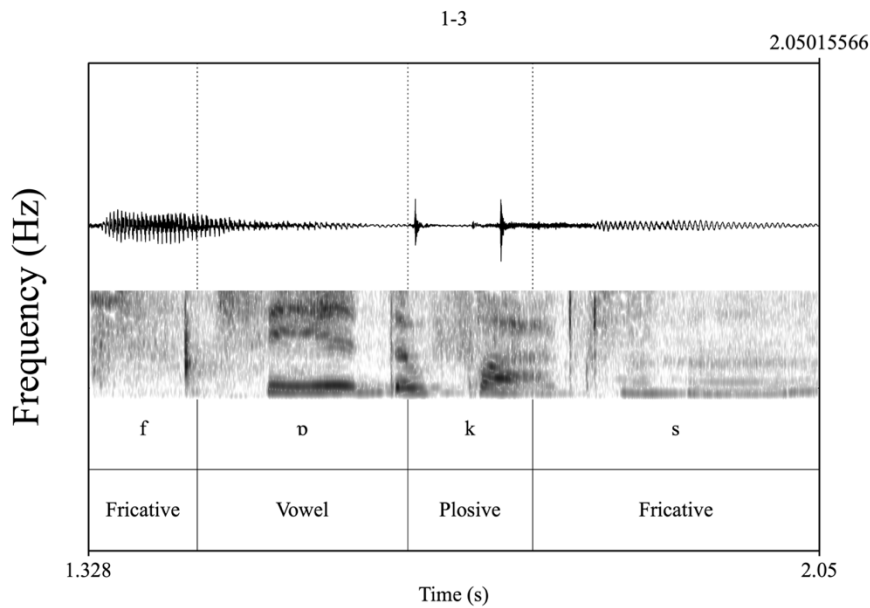


Figure 7. The plosive with coda bursts and frication noise for the presence of the coda cluster /ks/, in the word *fox*.

In the figure above, the occurrence of the plosive with coda bursts and frication noise for the /s/ sound indicates the presence of the coda cluster. However, Figure 8 represents the lack of the coda cluster for the word *fox* /fɒks/.

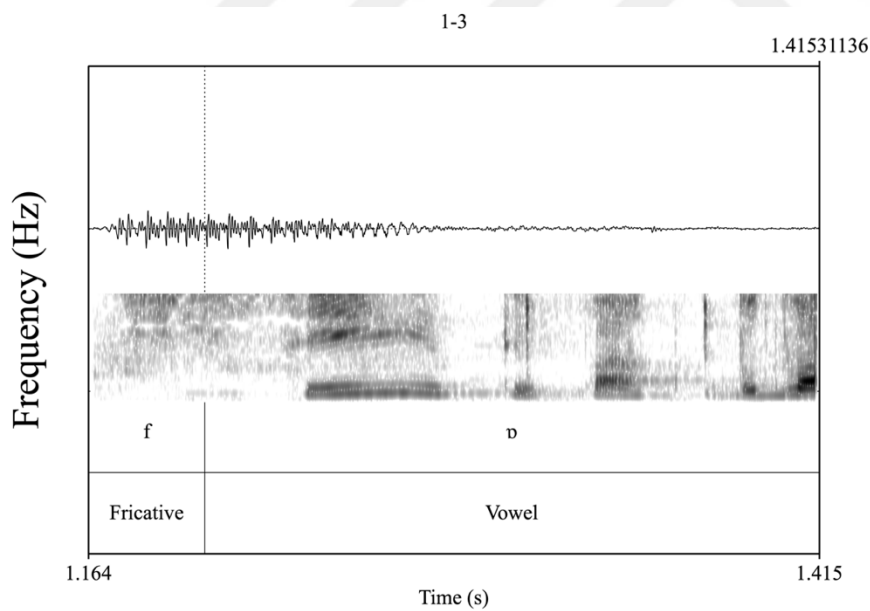


Figure 8. A sample production of the omission error type for the coda cluster /ks/, in the word *fox*.

As given in Figure 7, the coda cluster /k/ is coded as omitted since there is neither the plosive nor the frication. The vowel was not followed by any sound by any means. Likewise, it can be seen in Figure 8 that the participant substituted the coda cluster /ks/ with the singleton coda /s/ since the frication noise for /s/ is present, but the plosive and coda

bursts are absent. Therefore, the utterance was marked as an error of substitution in the data coding.

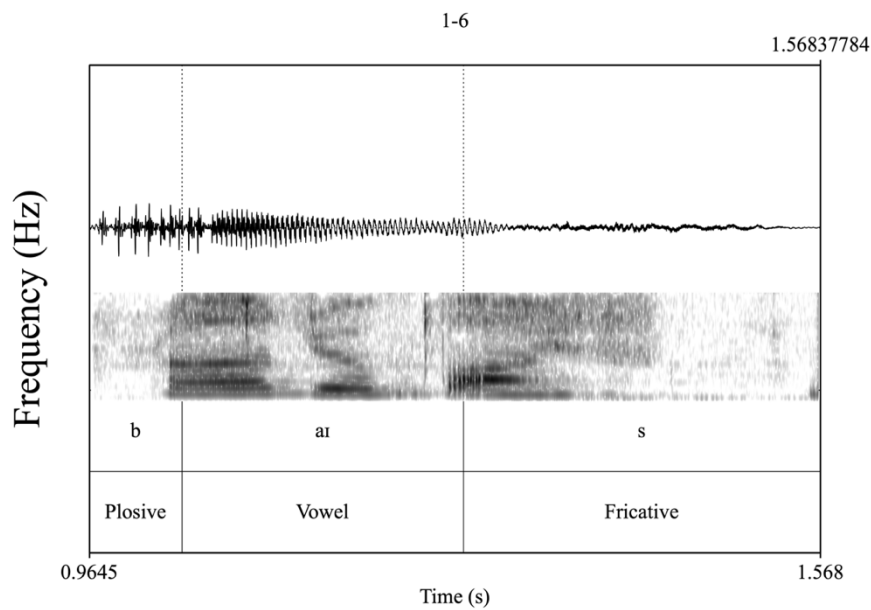


Figure 9. A sample production of the substitution error type for the coda cluster /ks/, in the word *bikes*.

The acoustic coding for the syllabic /əz/ was carried out by the examination of whether a waveform occurred in-between the frication noises. The spectrogram in the figure below, shows the form of periodic waves for fricative /s/, vowel /ə/ and fricative /z/.

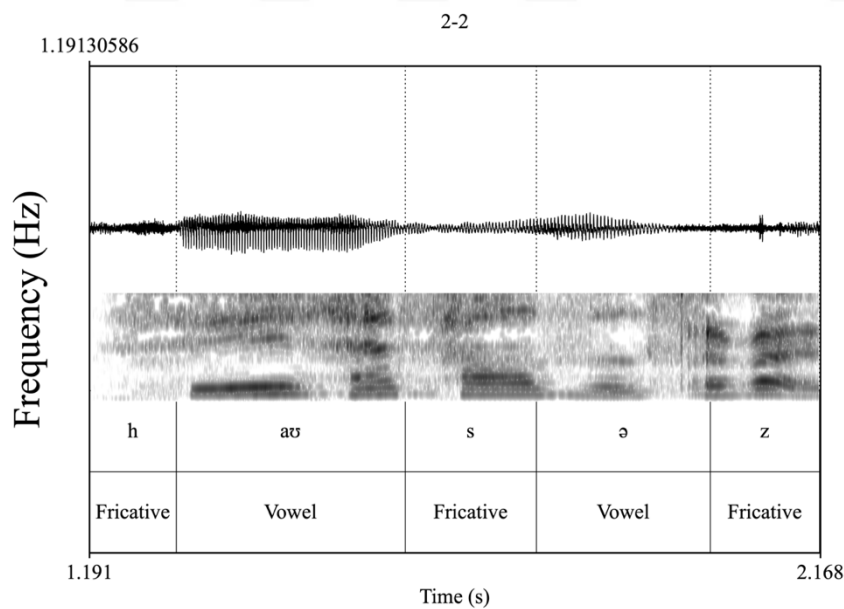


Figure 10. The vowel and frication noise distribution for the correct production of syllabic coda /əz/, in the word *houses*.

Figure 9 demonstrates the presence of the syllabic coda /əz/ in the word houses /haʊzəz/, and it is seen that waves occur periodically in vowels and frication noises. Next, a sample utterance for the omission error type in the production of syllabic /əz/ can be

identified in Figure 10 by the absence of waveform for one vowel and one frication noise. Therefore, the utterance was marked as an omission error.

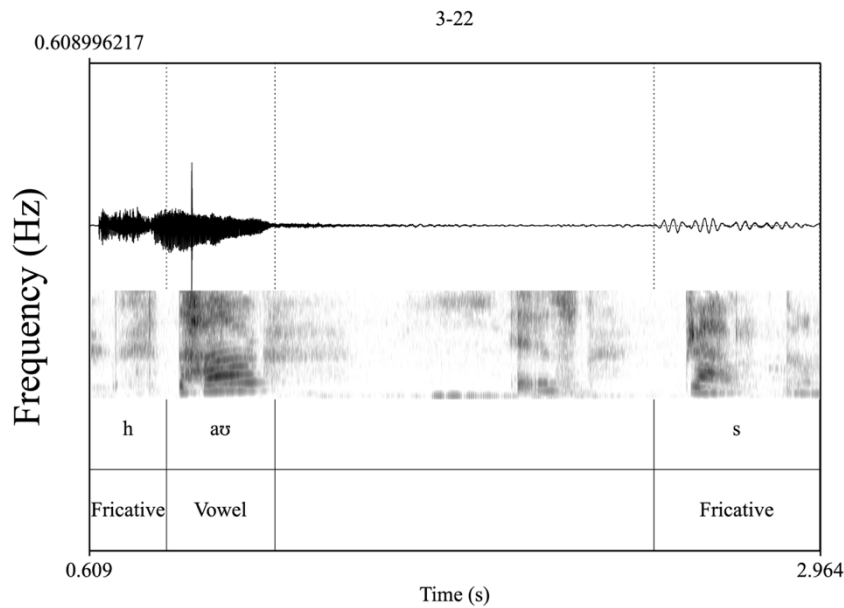


Figure 11. A sample production of the omission error type for the syllabic /əz/, in the word *houses*.

Figure 11 below demonstrates that the waveform has sound waves for fricative /z/, vowel /i/ and fricative /s/, which was identified as an error of substitution for the syllabic /əz/.

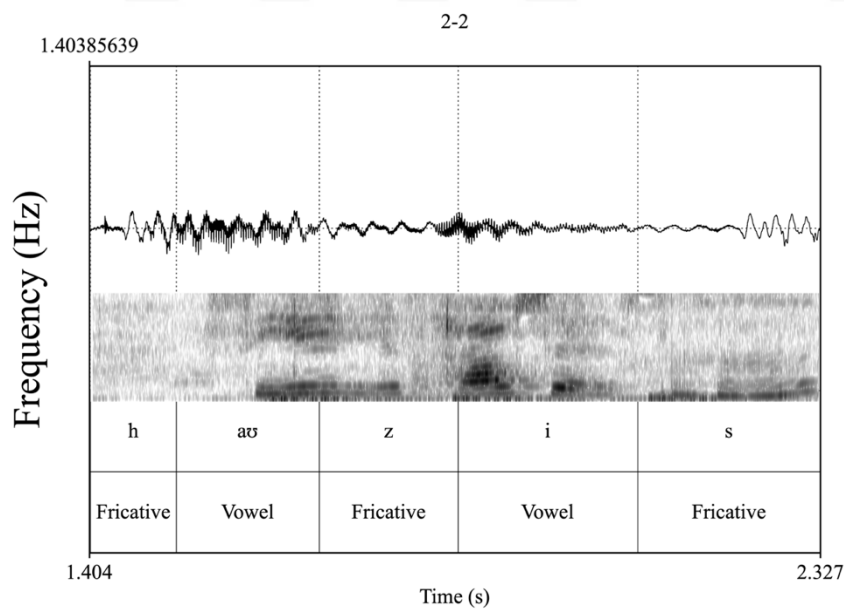


Figure 12. A sample production of the substitution error type for the syllabic /əz/, in the word *houses*.

The process of identifying the presence, absence and replaced forms of the mono and bi-syllabic productions, the presence of the sounds was coded as accurate, and the absence of the sounds was taken as errors of omission and the replacements were counted as errors

of substitution. This coding procedure was repeated for each utterance of the participants. Two experts in using the Praat program made sure that the data coding is accurate by checking the coded items after the coding process. The agreement between the coders was 97%. The discrepancies were resolved by a third expert Praat user.

4.8 Data Analysis

Throughout the data analysis, the responses of the participants were coded as correct and incorrect, and the SPSS 27.0 (IBM SPSS Statistics for Windows, 2020) was used as the data analysis tool. The comparisons were made based on data from 30 students who were applied on 3 different tasks: elicited imitation, elicited production, and comprehension. Descriptive and inferential statistical results were reported by comparing accuracy (accurate responses) and inaccuracy (errors of omission and substitution) rates across items, conditions, and tasks. The descriptive statistical analysis provides a detailed overview including the data distribution, the similarities and differences in the variables, and the summary of the conditions of the data (Fisher & Marshall, 2009). On the other hand, the inferential statistical analysis helps researchers make further indications and predictions about greater range of populations by the analysis of the current data (Byrne, 2007). Therefore, both types of statistical analyses were included in the data analysis phase of the current study.

First, the data were checked against the assumptions of normality using Shapiro-Wilk test. Shapiro-Wilk test examines the distribution of the data in terms of normality based on a null hypothesis that the data is normally distributed (Hanusz, Tarasinska, & Zielinski, 2016). It is interpreted that if the p -value is lower than .05, the null hypothesis can be rejected, and the data is not normally distributed. The Shapiro-Wilk test works the best with small sets of data. Since the study group consisted of 30 participants, the Shapiro-Wilk Test was found suitable to test the normality and was carried out in three of the research questions before the analyses of the related predictions. According to the results of the test, parametric and non-parametric statistical analyses were used depending on the distribution of the data and the research questions addressed.

Second, Friedman, chi-square, a Wilcoxon signed rank test and a paired samples t -test were used for further data analyses to test the predictions. These tests were utilized depending on whether the data met the assumptions of normality. Friedman test is a statistical analysis technique used to compare means between three or more dependent

groups in cases where the data is not distributed normally (Pereira, Afonso, & Medeiros, 2015). It compares the mean ranks between the related groups and indicates how the groups differed. It was used to compare students' performances between the three tasks to respond the first prediction of the first research question.

Third, the paired-samples *t*-test procedure compares the means of two variables for a single group. The procedure computes the differences between values of the two variables for each case and tests whether the average differs from 0 (Oakes, 2019). It was used to test whether the medial and final utterance affected the accuracy of the plural inflection in the second research question. The Wilcoxon signed-rank test is a non-parametric alternative to the paired *t*-test which is used to compare paired data when the data is not normally distributed (Taheri & Hesamian, 2013). It was performed in all predictions related to the research questions except for one where the paired samples *t*-test was used testing the utterance position in the second research question.

4.9 Conclusion

In sum, the chapter included the methodological structure of the study conducted on child L2 learners of English. The aim of the current study was to examine the production and comprehension of the English plural inflectional morphology by 30 Turkish-English bilingual and biliterate child L2 learners. The data collection involved three tasks, namely elicited imitation, elicited production, and comprehension. This chapter presented the data collection process with the instruments, the demographic characteristics of the participants, the research questions, and related predictions elaborately. The data coding and data analysis procedures were explained in detail in the chapter including the acoustic coding and the statistical analysis tools and why they were performed. The following chapter presents the results of the study in separate sub-sections for each research question and related predictions.

CHAPTER 5. RESULTS

5.1 Introduction

In this section, the results of the data analysis were presented under three main subheadings, which were in line with the research questions and related predictions. In subsection 5.2, the analysis of the first research question, along with two related predictions, was explained. In what follows, the data analysis results for the second research question, including seven predictions were given in subsection 5.3. The analysis of the third research question and three predictions were presented in subsection 5.4. The last subsection, 5.5, included a summary of the overall conclusion of the results.

5.2 Results for the First Research Question

Research Question 1: Is there an asymmetry in the rates of accuracy among the imitation, production, and comprehension tasks?

First, tests of normality were conducted to see whether the data distribution met the assumptions of normality for comprehension, elicited imitation, and elicited production tasks. A Shapiro-Wilk test demonstrated that the data from the comprehension task ($W = .83, p < .05$), the elicited production task ($W = .87, p = .02$) deviated significantly from normality. The data for the elicited imitation task ($W = .97, p = .55$) had normal distribution. The skewness and kurtosis values were both placed between +1 and -1.

5.2.1 Results for prediction a

Prediction a: If there is an asymmetry between the two modes, in other words, if there is difficulty in mapping forms and functions, then the children are expected to perform more accurately in the comprehension task than in the imitation and production tasks.

First, the chi-square test results showed that the task type predicted varying rates of accuracy, $\chi^2 (2, N = 30) = 26.47, p < .001$. A Wilcoxon signed rank test showed that there was a significant difference in the rates of accuracy between the comprehension ($n = 26, Mdn = 17$) and the elicited production tasks ($n = 4, Mdn = 5.25, z = 4.351, p < .001$) and between the elicited imitation ($n = 27, Mdn = 16.48$) and elicited production tasks ($n = 3, Mdn = 6.67, z = 4.371, p < .001$). More precisely, the children were more accurate in their responses to the items in the comprehension and elicited imitation tasks. Yet, such a significant difference did not exist in rates of accuracy between the comprehension ($n = 15,$

$Mdn = 13.57$) and the elicited imitation tasks ($n = 15$, $Mdn = 17.43$, $z = .596$, $p = .551$). Therefore, the children found it easier to comprehend than to produce plural morphology, giving evidence for a surface variability for function-form mapping. So, the verification of the predictions with respect to the first research question in our study was limited to the elicited production task.

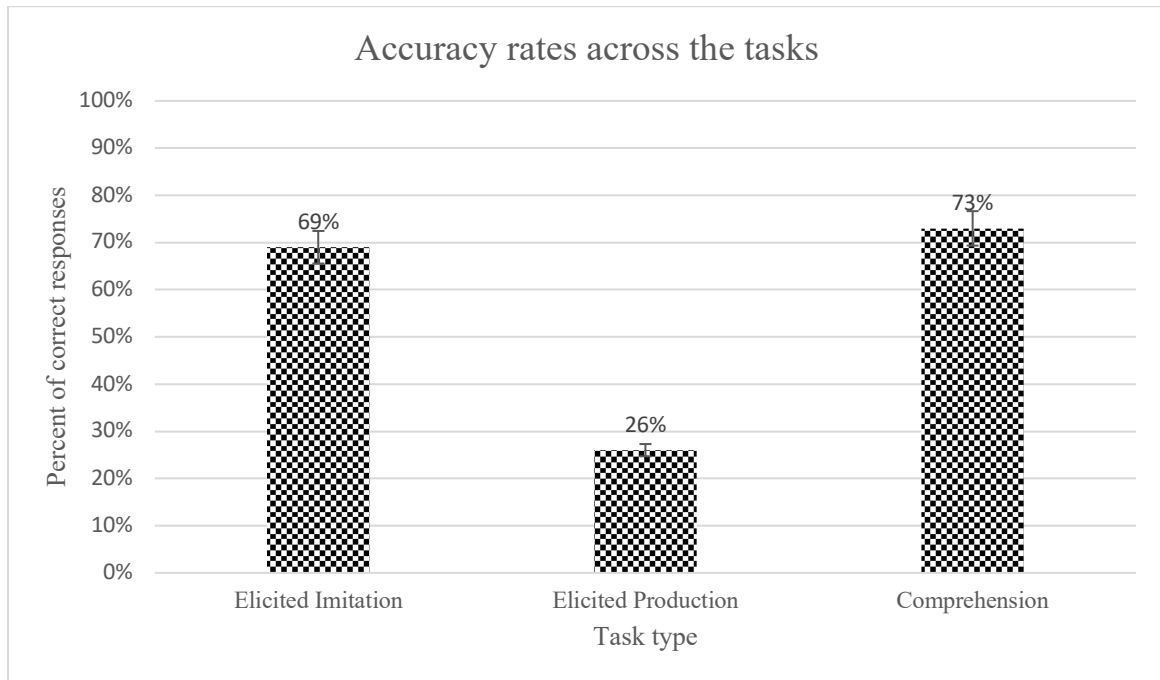


Figure 13. The rates of accuracy in the elicited imitation, elicited production, and comprehension tasks.

As presented in Figure 12, the elicited imitation, elicited production, and comprehension tasks demonstrated different rates of accuracy with 69%, 26%, and 73% respectively. While the rates of correct responses for the elicited imitation and the comprehension tasks differed slightly, the accuracy rate for the elicited production task was statistically significantly lower than the other two tasks.

5.2.2 Results for prediction b

Prediction b: If there is transfer from the children's L1 to L2, then the children are predicted to produce more omission errors than substitution errors in the elicited imitation and elicited production tasks.

The second prediction investigated the rates of omission and substitution errors in the elicited imitation and elicited production tasks. As mentioned in the results for the previous prediction, there was a significant difference in the accuracy rates between the elicited imitation ($n = 27$, $Mdn = 16.50$) and elicited production tasks ($n = 3$, $Mdn = 6.67$) as validated by the Wilcoxon signed rank test ($z = 4.371$, $p < .001$). The comprehension task

results were not included since the participants were asked to point at the correct answers rather than to reply orally. Therefore, the responses did not show much variability in the comprehension task.

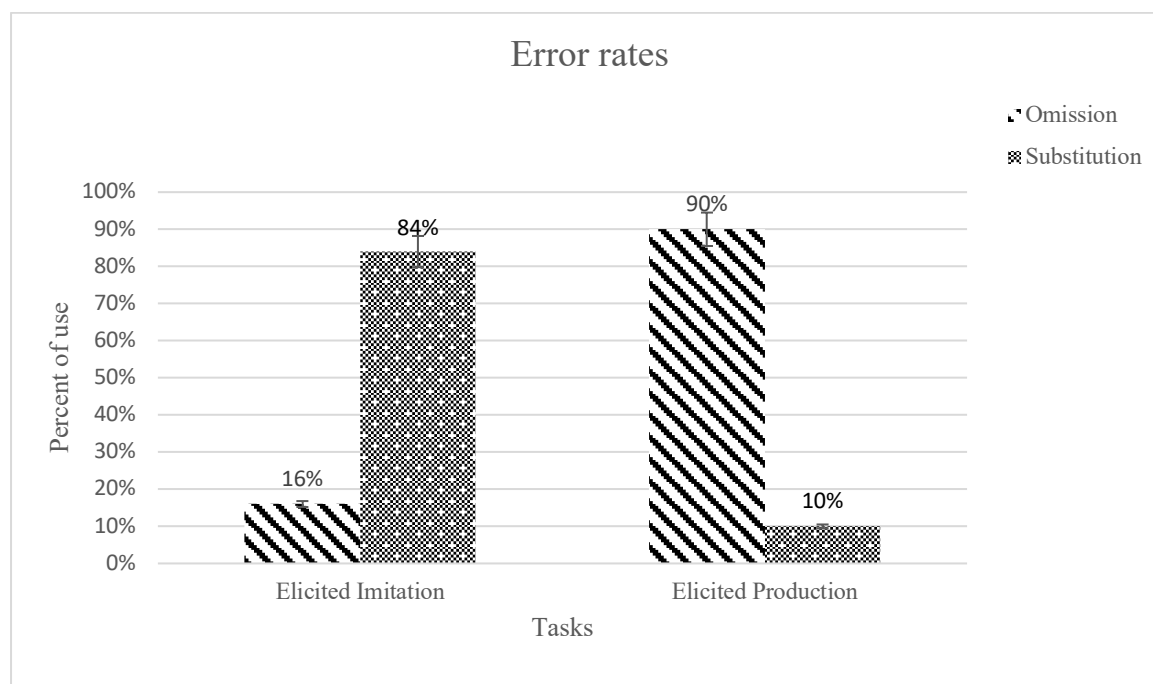


Figure 14. The error rates in the elicited imitation and elicited production tasks.

The children's responses in the elicited imitation and elicited production tasks were analyzed in terms of the error types. As presented in Figure 13, it was revealed that the children made more substitution errors (84%) than omission errors (10%) in the elicited imitation task. However, the errors that they made in the elicited production task were mostly omission errors (90%). In light of the findings, it can be stated that the children were more inclined to change the utterance where they found it difficult to imitate the sound, and they omitted the plural inflection when they were asked to produce the plural form.

5.3 Results for the Second Research Question

Research Question 2: Does phonological complexity determine accuracy in the production of singular and plural morphology by Turkish young child L2 learners of English?

The second research question investigated the data obtained from the elicited imitation and elicited production tasks. The predictions c, d, e, f, g, h were related to the elicited imitation and the prediction i was related to the elicited production task.

Firstly, a Shapiro-Wilk Test was conducted to determine the normality distribution of the elicited imitation task data in terms of six different complexities (i.e., coda type, number, utterance position). The results of the normality test demonstrated that the data deviated significantly from normal distribution in all five complexities: singleton and coda cluster in singular words ($W = .91, p = .02$; $W = .55, p < .05$), singleton and coda clusters in plural words ($W = .89, p = .04$; $W = .60, p < .05$), coda cluster in singular and plural words ($W = .55, p < .05$; $W = .60, p < .05$), singleton coda in singular and plural words ($W = .90, p = .21$; $W = .88, p = .004$), singleton and syllabic codas in plural words ($W = .88, p = .004$; $W = .93, p = .055$). In terms of the utterance position, the data of the utterance-medial ($W = .93, p = .04$) and utterance-final ($W = .97, p = .38$) complexities demonstrated evidence for normal. The skewness and kurtosis values were both placed between +2 and -2. Thus, non-parametric tests were found to be suitable to investigate these predictions.

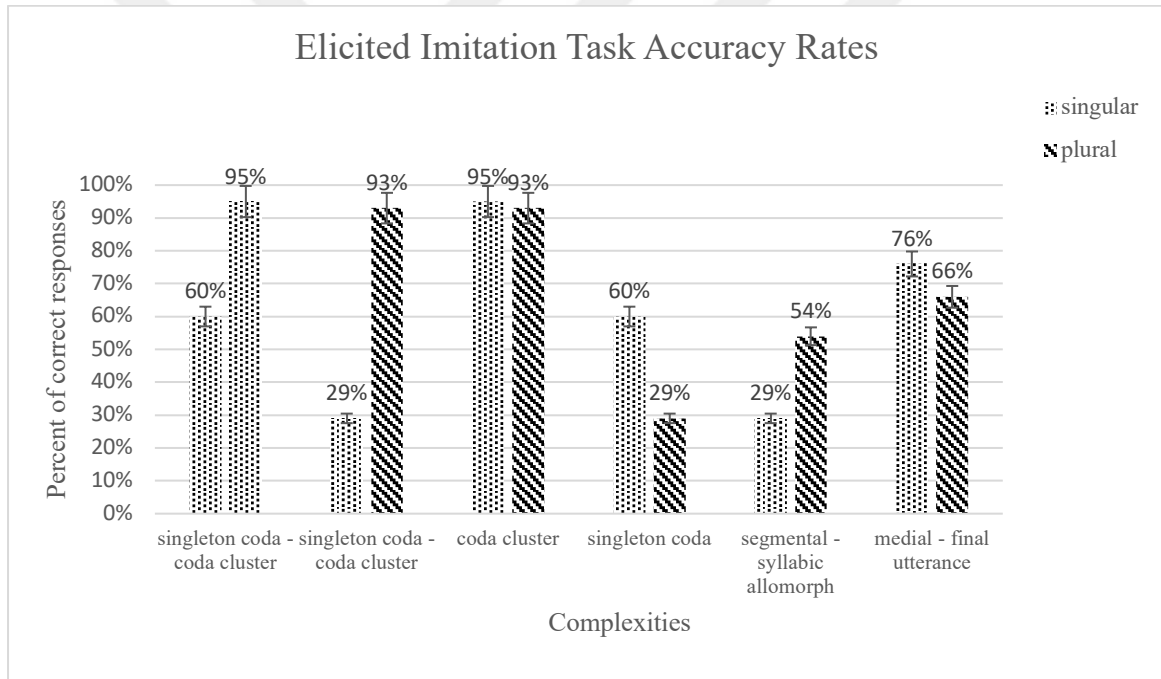


Figure 15. The accuracy rates in the elicited imitation task.

The children's responses were analyzed for each complexity in the second research question. As Figure 14 presents, Turkish-English bilingual children found it easier to produce the coda clusters than to produce the singleton coda in both singular and plural words. Also, their accuracy in their productions of coda clusters (95%) and singleton codas (60%) in singular words was higher than their accuracy of the same complexities in plural words with 93% for plurals and 29% for singulars. While the accuracy rates in the coda cluster were higher than 90%, the singleton coda accuracy rates were lower in singular (60%) and plural words (29%). On the other hand, when the singleton and syllabic codas were

compared, it was revealed that the children were more accurate in their responses to the syllabic codas (54%) than to the singleton codas (29%). Apart from the coda complexity, the utterance position was found to be effective in children's productions of the plural inflectional morphology in the sense that they had more correct responses in sentences where the plural words were placed medially (76%), while their accuracy was lower in the sentences where they hear the plural words at the end of the sentences (66%). A Wilcoxon signed rank test was performed to analyze each complexity and results will be given in the following sub-sections separately for the research predictions.

Secondly, a Shapiro-Wilk test was run to find out the distribution of the elicited production data, and the related prediction i, which investigated participants' productions of the coda cluster and the syllabic allomorph. The test results indicated that the data for both plural words ending with a coda cluster ($W = .82, p = .06$) and a syllabic plural ($W = .42, p = .07$) were normally distributed. Besides, the skewness and kurtosis values for the data extended the normality range, which is between -2 and +2 (George & Mallery, 2010), to a great extent. Therefore, parametric tests were suitable to be conducted comparing participants' productions of cluster and syllabic plural words. The paired *t*-test was performed for the analysis, and it was reported in the related sub-section below.

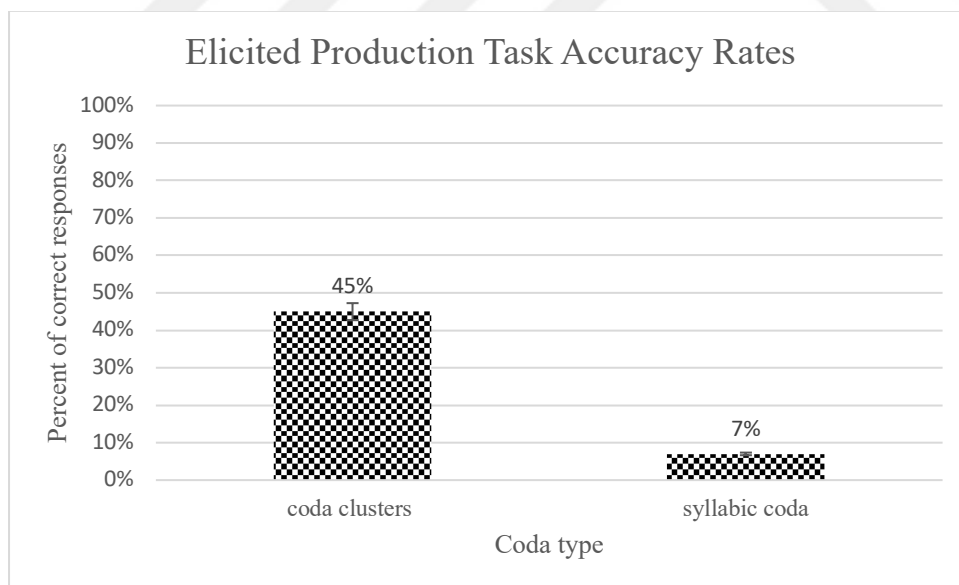


Figure 16. The accuracy rates in the elicited production task.

In the elicited production task, the accuracy rates in the coda complexity mostly differed. As Figure 15 demonstrates, the participants were more accurate in forming the plural nouns ending with a coda cluster than with a syllabic coda. While the percentage of the correct responses in the syllabic coda was 7%, the coda cluster accuracy was higher with

45%. This difference was statistically significant [$t(29) = 3.76, p = .001$]. Yet, it was still below chance level. It can be interpreted that the L1 Turkish speaking children who learn English as a second language struggled to inflect the nouns using a syllabic coda, which is absent in their first language, while they managed to produce plurals using the coda clusters in almost half of the task items.

5.3.1 Results for prediction c

Prediction c: The children are expected to be more accurate in their productions of singleton codas (e.g., nose /nəʊz/) than in coda clusters (e.g., fox /fɒks/) in singular words.

The Shapiro-Wilk normality test demonstrated that the data deviated significantly from normal in singleton coda in singular words ($W = .91, p = .02$) and coda cluster in singular words ($W = .55, p < .05$). Therefore, A Wilcoxon signed rank test was run and presented that there was a significant difference in participants' accuracy rates between the singleton codas ($n = 2, Mdn = 4.50$) and coda clusters ($n = 22, Mdn = 13.23$) in singular words ($z = -4.074, p < .001$). It indicated that the participants were more accurate in producing the coda cluster than the singleton coda in singular words. This finding contradicted our prediction.

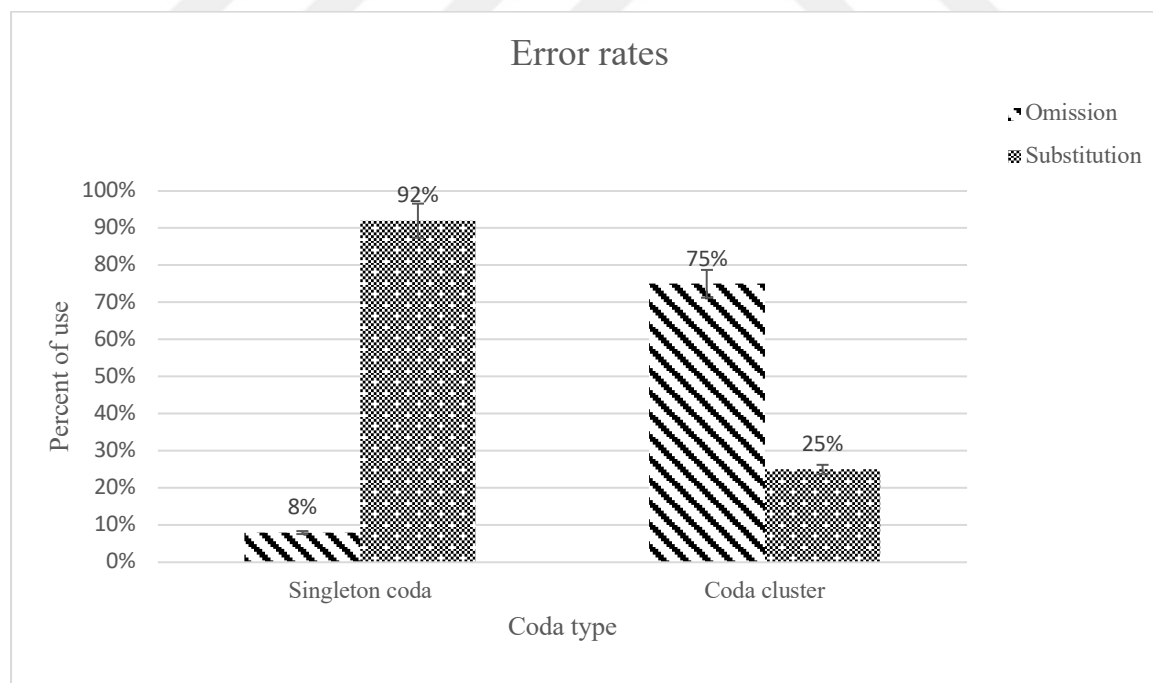


Figure 17. The error rates of the singleton coda and coda cluster in singular words.

When the error rates were examined in children's productions of singleton coda and coda clusters in singular words, it can be seen that there was a contrast between the coda types regarding the error types. As Figure 16 shows, the children made substitution errors

(92%) more than omission errors (8%) in their productions of the singleton coda. In contrast, they made more omission errors (75%) than substitution errors (25%) in their productions of the coda clusters. It can be interpreted that the children mostly substituted the singleton coda, and they were less successful in producing the words ending with a singleton coda overall. Furthermore, they mostly omitted the coda cluster in the singular words, but they performed better in their productions of the singular words with coda clusters.

5.3.2 Results for prediction d

Prediction d: The children are expected to be more accurate in their productions of singleton codas (e.g., bees /bi:z/) than coda clusters (e.g., ducks /dʌks/) in plural words.

The Shapiro-Wilk normality test demonstrated that the data deviated significantly from normal in singleton coda in plural words ($W = .89, p = .04$) and coda clusters in plural words ($W = .60, p < .05$). Then, a Wilcoxon signed rank test was run and it presented that there was a significant difference in participants' accuracy rates between the singleton codas ($n = 1, Mdn = 2$) and coda clusters ($n = 29, Mdn = 16$) in plural words ($z = -4.777, p < .001$). It was concluded that the participants were more accurate in their productions of coda clusters than singleton codas in plural words. The research prediction was not borne out since the findings demonstrated a contradiction with the assumption. Next, the error rates of the children in the singleton coda and coda clusters in plural words were examined and were presented in Figure 17.

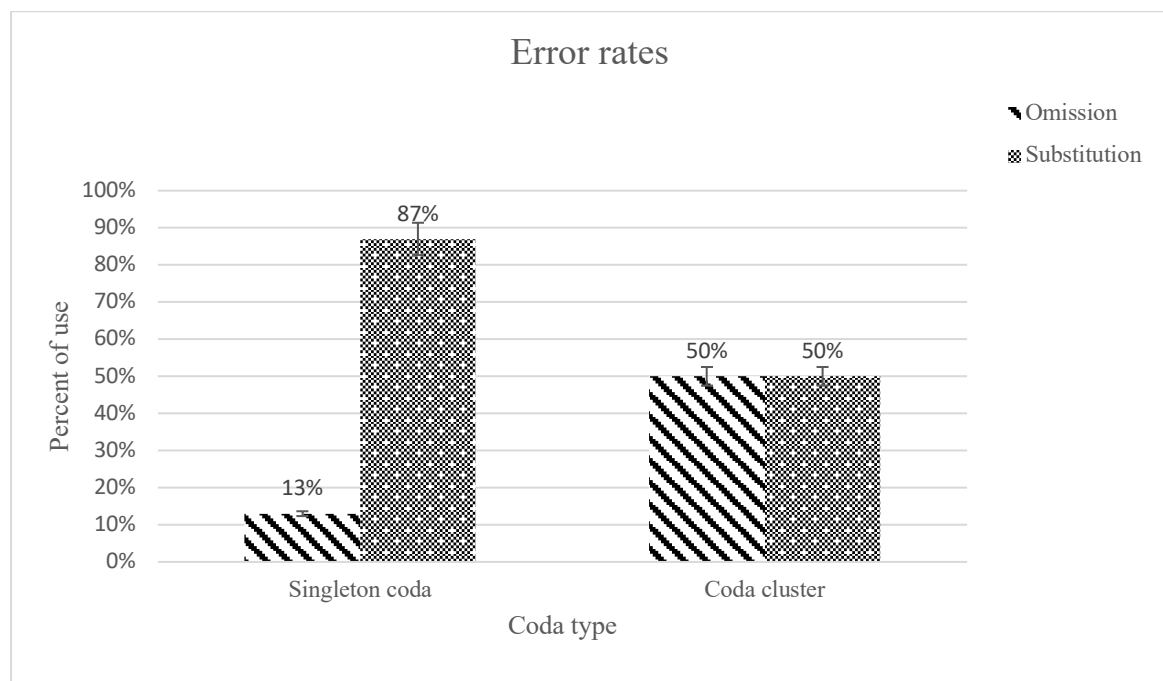


Figure 18. The error rates in the singleton coda and coda cluster in plural words.

As given in the figure above, it can be said that the children made more substitution errors (87%) than omission errors (13%) in words ending with a singleton coda, and there is a significant difference between the error rates. However, their omission (50%) and substitution rates (50%) in the words ending with a coda cluster were equal. Therefore, it can be interpreted that the children performed better in their productions of coda clusters in plural words, and they sought to either change or omit the coda when they struggled. However, their performance was poorer in the production of the words ending with a singleton coda, and they mostly resorted to substitution when they struggled.

5.3.3 Results for prediction e

Prediction e: The children are expected to be more accurate in their productions of coda clusters (e.g., fox /fɒks/) in singular words than coda clusters (e.g., ducks /dʌks/) in plural words.

The Shapiro-Wilk normality test demonstrated that the data deviated significantly from normal in the coda cluster in singular words ($W = .55, p < .05$) and coda cluster in plural words ($W = .60, p < .05$). Afterwards, a Wilcoxon signed rank test showed that there was no statistically significant difference between the accuracy rates of the correct responses for coda clusters in singular words ($n = 7, Mdn = 6.50$) and for cluster codas in plural words ($n = 5, Mdn = 6.50, z = -0.577, p < .56$). In other words, the children's performance in producing the coda clusters in singular words and in plural words were not statistically significantly different. The error rates in children's productions of coda clusters in singular and plural words were investigated and presented in Figure 18.

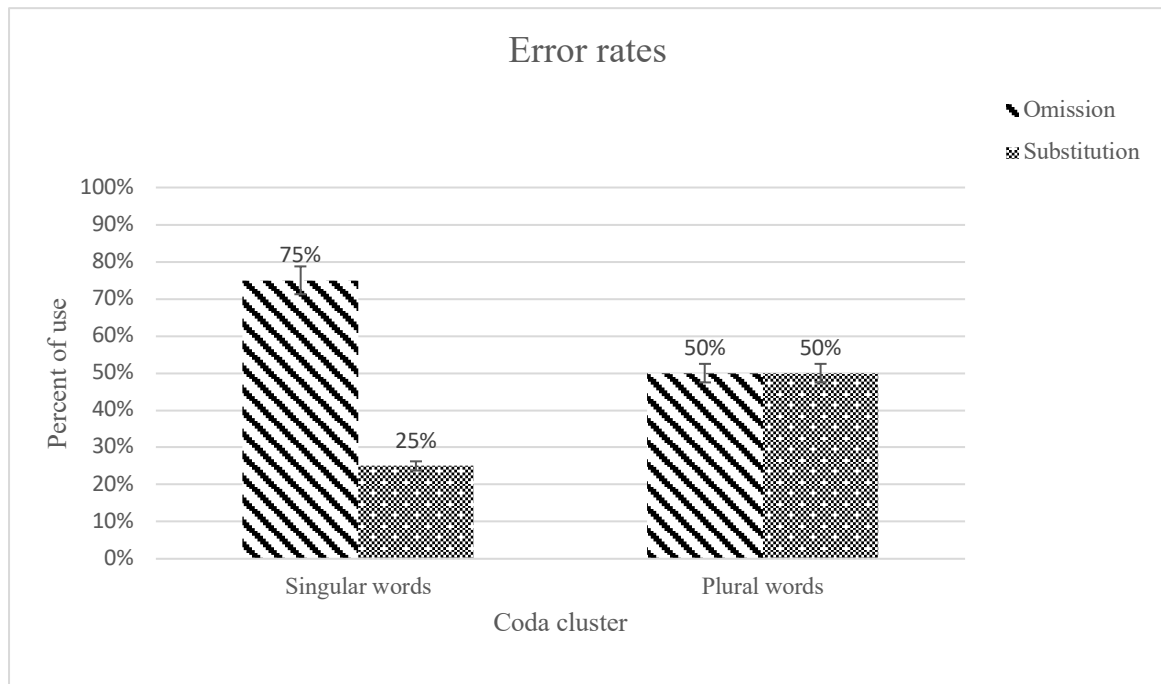


Figure 19. The error rates in singular and plural words ending with a coda cluster.

As illustrated in the figure, the children made mostly substitution errors in the singular words (75%), but their errors were distributed equally in the plural words ending with a coda cluster (50%). Since the accuracy rates of both singular and plural words was similar, it can be interpreted that the error types demonstrated that what the participants struggled to produce the most was the singular words ending with a coda cluster.

5.3.4 Results for prediction f

Prediction f: The children are expected to be more accurate in their productions of singleton codas (e.g., nose /nəʊz/) in singular words than singleton codas (e.g., bees /bi:z/) in plural words.

The Shapiro-Wilk normality test demonstrated that the data deviated significantly from normal in the singleton coda in singular words ($W = .90, p = .21$) and singleton coda in plural words ($W = .88, p = .004$). A Wilcoxon signed rank test was run and it presented that there was a statistically significant difference in the rates of accuracy between singular ($n = 23, Mdn = 12.80$) and plural words ($n = 1, Mdn = 5.50$) ending with a singleton coda ($z = -4.186, p < .001$). It was interpreted that the children were more accurate in their productions of singleton codas in singular words than in plural words. This finding is in line with the prediction made. Next, the error rates in children's productions of singleton codas in singular and plural words were examined.

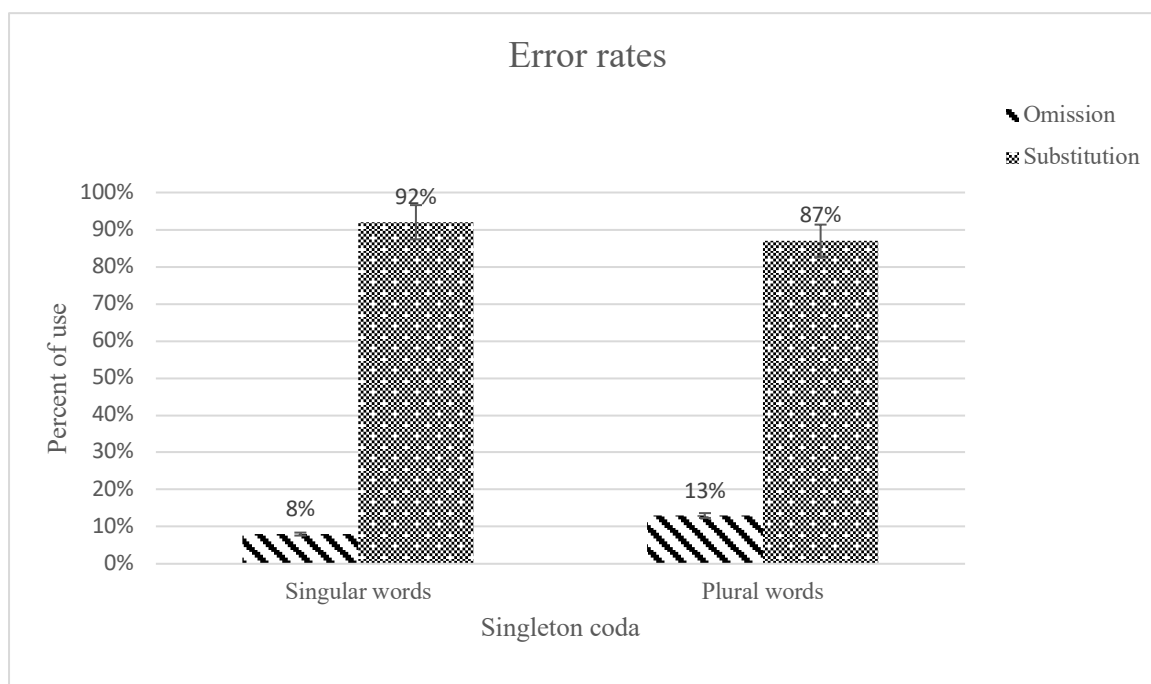


Figure 20. The error rates in singular and plural words ending with a singleton coda.

As Figure 19 shows, the children made mostly substitution errors in both singular (92%) and plural words (87%). Since their performance in the production of the singleton coda in singular words was higher, it can be interpreted that they mostly substituted the coda in the plural words. Furthermore, the children may have found it difficult to identify the plurals, and they may not have yet developed the plural inflectional morphology in the L2.

5.3.5 Results for prediction g

Prediction g: The children are expected to be more accurate in their productions of singleton plurals (e.g., bees /'bi:z/) than in syllabic plurals (e.g., horses /housəz/).

The Shapiro-Wilk normality test demonstrated that the data deviated significantly from normal in the singleton coda in plural words ($W = .88, p = .004$) and the syllabic coda in plural words ($W = .93, p = .05$). A Wilcoxon signed rank test demonstrated that there was a significant difference in the accuracy rates of the participants between the singleton ($n = 5, Mdn = 11.80$) and syllabic codas ($n = 22, Mdn = 14.50$) in plural words ($z = -3.168, p = .002$). That is, the children's performance in the syllabic plurals was better than in the singleton plurals. This finding demonstrated a contradiction with the research prediction. Figure 20 presents the rates of errors that the child participants made producing plurals ending with singleton and syllabic codas.

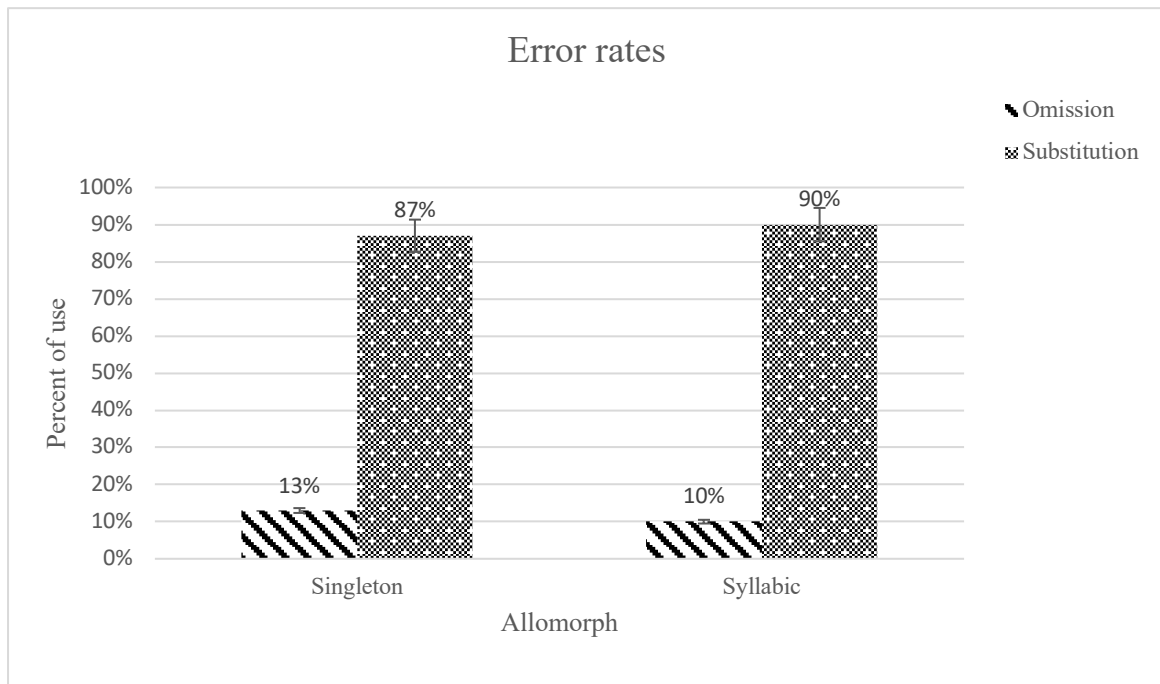


Figure 21. The error rates in the singleton and syllabic codas in plural words.

It can be said that the children made more substitution errors in both allomorph types, 87% in the singleton coda and 90% in the syllabic coda. Therefore, the findings can be interpreted that the children performed better in producing the syllabic plurals than singleton plurals. The children may have tended to alter the syllable when they encountered with the sound that does not exist in their native language.

5.3.6 Results for prediction h

Prediction h: The children are predicted to be more accurate in their productions of plural inflections in sentence final position (e.g., Smell the *roses*) than in sentence medial position (e.g., The *roses* are pink).

The Shapiro-Wilk normality test demonstrated that the data of the utterance-medial ($W = .93, p = .04$) and utterance-final ($W = .97, p = .38$) were normally distributed. Therefore, a paired samples t-test was performed to determine the accuracy rate for the utterance position and the results indicated that there was a significant difference in the rate of accuracy between the medial and final utterances. The children were more accurate in their productions of plural inflections in sentence medial position ($M = .76, SD = .126$) than in sentence final position ($M = .66, SD = .112$); [$t(29) = 3.76, p < .001$]. The finding demonstrated contradictions with the relevant prediction. Figure 21 demonstrates the rates of error that child participants made producing the sentences where the plural words were placed either medially or finally.

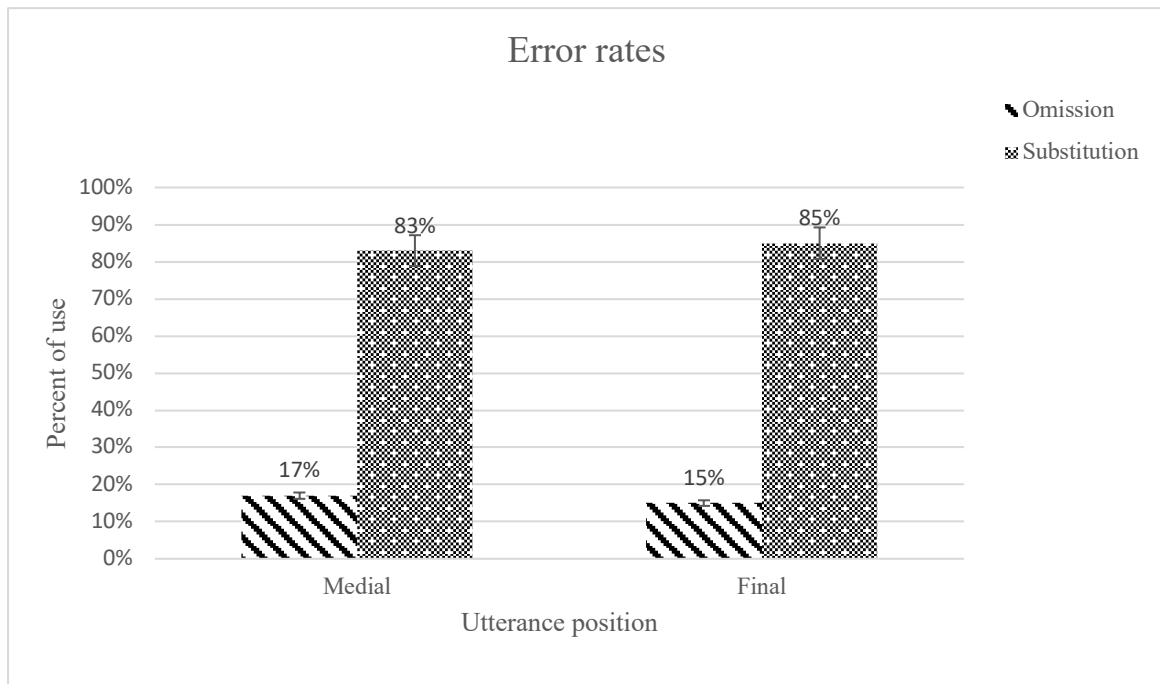


Figure 22. The error rates in the medial and final utterances of the plural words.

As shown in the figure above, the children made more substitution errors in both utterance positions, 83% for the medial utterance and 85% for the final utterance. It can be concluded that although their performance in the production of the plural words uttered medially and finally differed, the children's errors showed similarity in terms of the error types. Turkish-English bilingual children found it difficult to produce words in the sentence-final position, and they mostly substituted the coda when they struggled in both utterances.

5.3.7 Results for prediction i

Prediction i: The children are predicted to perform more accurately in plural words ending with a coda cluster (e.g., ducks /dʌks/) than in syllabic plural words (e.g., horses /hoʊsəz/) in the production task.

The Shapiro-Wilk normality test demonstrated that the data for both plural words ending with a coda cluster ($W = .82, p = .06$) and a syllabic plural ($W = .42, p = .07$) were normally distributed. Therefore, a Wilcoxon signed rank test was performed and it showed that there was a statistically significant difference between the rates of accuracy for the plural words ending with a coda cluster ($n = 17, Mdn = 9$) and syllabic plural words ($n = 0, Mdn = 0$) in the production task ($z = -3.652, p < .001$). In other words, the children performed more accurately in plural words ending with a coda cluster than in syllabic plural words in the production task. This finding was in line with our prediction. Figure 22 demonstrates the

rates of error the child participants made producing the coda clusters and syllabic codas in plural words.

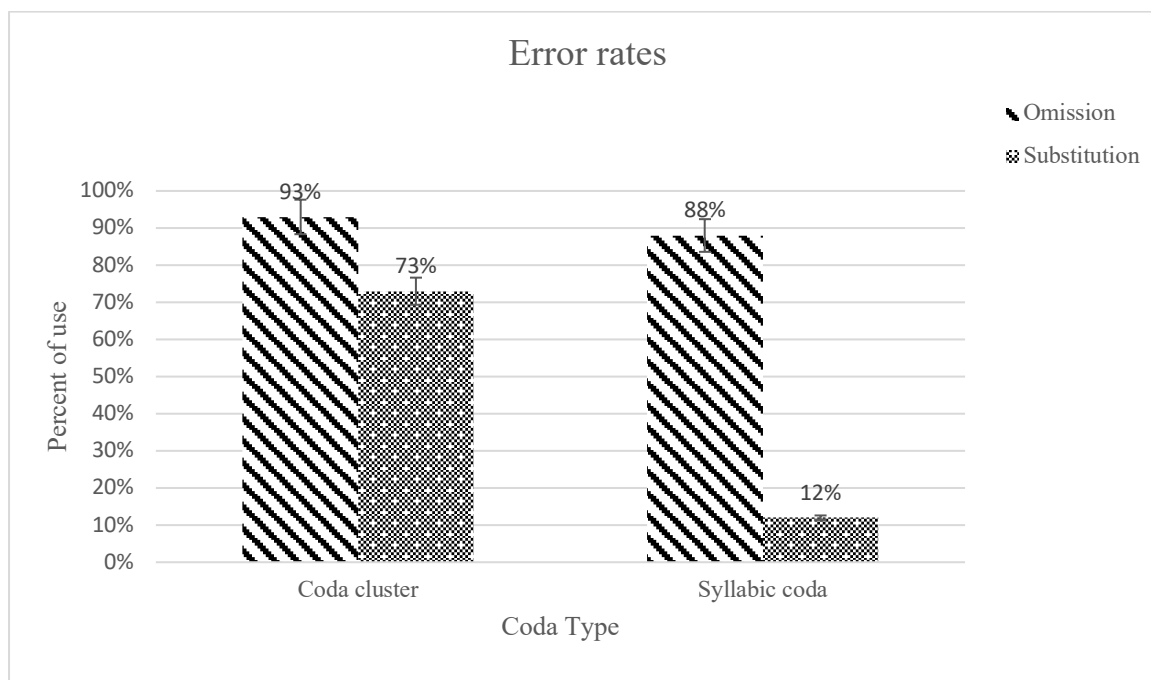


Figure 23. The error rates in the production of coda cluster and syllabic coda in plural words.

In terms of the plural words ending with the coda cluster, the children made more omission errors (93%) than substitution errors (73%). Also, they made more omission errors (88%) than substitution errors (12%) in their productions of the syllabic coda. Therefore, it can be interpreted that Turkish speaking children found it difficult to form plural words in English using the syllabic coda, and they mostly omitted the syllable.

5.4 Results for the Third Research Question

Research Question 3: Does phonological complexity determine accuracy in the comprehension of singular and plural morphology by Turkish young child L2 learners of English?

The third research question investigated participants' comprehension of the plural inflection in terms of segmental and syllabic allomorph complexities. A Shapiro-Wilk test was performed to determine the distribution of the data for the third research question and related predictions. The test results indicated that the data did not demonstrate evidence for normal distribution in all three complexities: segmental allomorph in singular and plural words ($W = .64, p < .05$; $W = .78, p < .05$), syllabic allomorph in singular and plural words ($W = .91, p = .015$; $W = .85, p = .001$), segmental and syllabic allomorphs in plural words ($W = .78, p < .05$; $W = .85, p = .001$). The skewness and kurtosis values were placed in the

normal distribution rates between -1 and +1. Therefore, non-parametric tests were used to address the final research question. The Figure 23 presents the accuracy rates of the child participants across three allomorph complexities in the comprehension task.

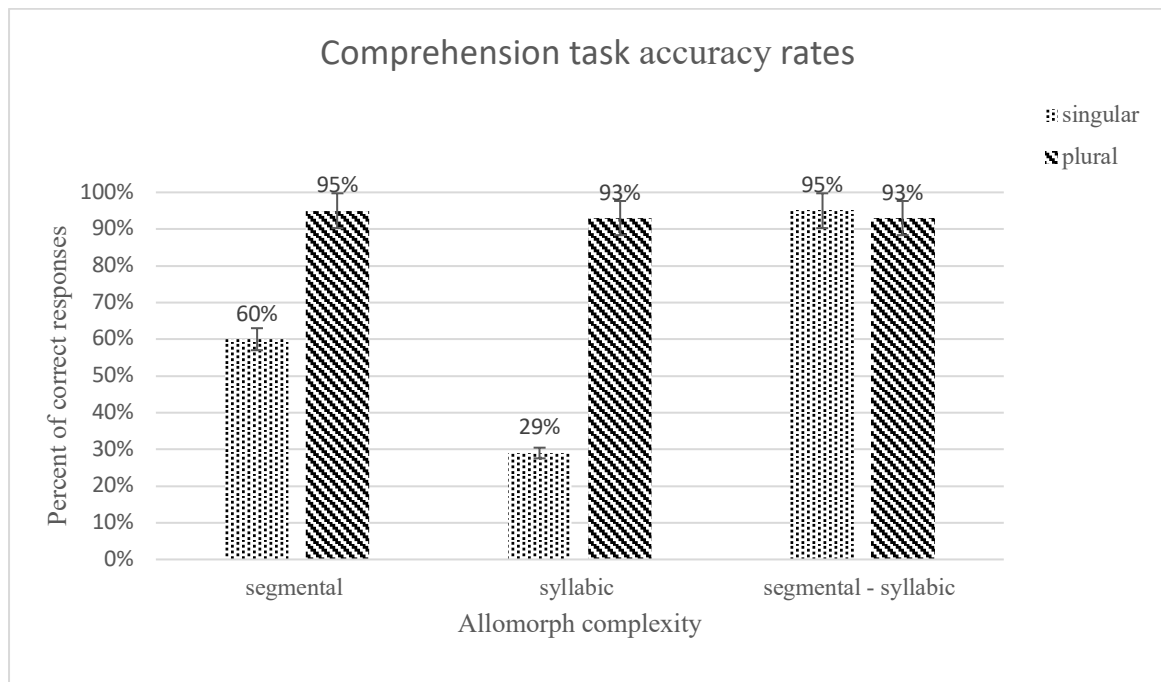


Figure 24. The accuracy rates in the comprehension task.

It can be said that the children were more accurate in their responses in plural words (95%) than in singular words (60%) in segmental allomorphs. In contrast, they had more correct responses in plural words (93%) than in singular words (29%) ending with the syllabic allomorph. In terms of the plural words, the children's performance was at ceiling in both segmental (95%) and syllabic allomorphs (93%). It can be interpreted that the child participants performed better in their productions of plural words ending with both segmental and syllabic codas.

5.4.1 Results for prediction j

Prediction j: The children are predicted to be more accurate in their productions of singular novel words (e.g., tep /tep/) than segmental plural novel words (e.g., teps /teps/).

Since the Shapiro-Wilk test proved that the data for the segmental allomorph in singular words ($W = .64, p < .05$) and segmental allomorph in plural words ($W = .78, p < .05$) deviated from normal significantly, a Wilcoxon signed rank test was run and it showed that there was not a statistically significant difference in the rates of correct responses between the singular ($n = 9, Mdn = 6.33$) and plural novel ($n = 3, Mdn = 7$) words in terms of the segmental allomorph ($z = -1.426, p = .154$). The rate of accuracy was lower in singular

words than in plural words as explained in Figure 23. Therefore, it can be concluded that the finding is not in line with the research prediction.

5.4.2 Results for prediction k

Prediction k: The children are predicted to be more accurate in their productions of syllabic singular novel words (e.g., giss /gis/) than syllabic plural novel words (e.g., gisses /gisəz/).

The Shapiro-Wilk test demonstrated that the data for the syllabic allomorph in singular words ($W = .91, p = .015$) and the syllabic allomorph in plural words ($W = .85, p = .001$) deviated from normal significantly, a Wilcoxon signed rank test was run and it demonstrated a statistically significant difference in the rates of accuracy between the singular ($n = 0, Mdn = 0$) and plural novel words ($n = 30, Mdn = 15.50$) in terms of the syllabic allomorph ($z = -4.834, p < .001$). Considering the test results and the accuracy rates as presented in Figure 23, it can be interpreted that the children found it difficult to comprehend the syllabic plural allomorph and they failed to identify the plural allomorph in the singular and plural forms. Accordingly, the research prediction is not verified.

5.4.3 Results for prediction l

Prediction l: The children are predicted to be more accurate in their productions of segmental plural novel words (e.g., teps /teps/) than syllabic plural novel words (e.g., gisses /gisəz/).

The Shapiro-Wilk test demonstrated that the data for the segmental allomorph in plural words ($W = .78, p < .05$) and the syllabic allomorph in plural words ($W = .85, p = .001$) deviated from normal significantly. Therefore, a Wilcoxon signed rank test was performed and it demonstrated that there was not a statistically significant difference in the rate of correct responses between the words ending with a segmental allomorph ($n = 16, Mdn = 13.25$) and with a syllabic allomorph ($n = 8, Mdn = 11, z = -1.785, p = .074$). As given in Figure 23, the accuracy rate in plural novel words ending with a segmental allomorph was slightly higher than the plural novel words ending with a syllabic allomorph. Therefore, the finding was in line with the research prediction.

5.5 Interim Summary

Recall that the stimuli were adopted from Xu Rattanasone and Demuth (2022) which compared the comprehension and production of plural morphology between English speaking children (mean age: 3;1) and Mandarin-English bilingual children (mean ages: 3;5)

in the Australian context. We did not have an English-speaking control group; however, the table below summarized the research questions by adding up our findings on what is reported in the literature:

Table 7.

A comparison of monolingual and bilingual children on the same tasks

	Condition	Prediction	Task Item	Results (L1 Turkish)	Results (L1 English)	Results (L1 Mandarin)
Research Question 1	Accuracy across the tasks	Comprehension	> N/A	✓	✓	✗
		Elicited imitation				
		Comprehension	> N/A	✓	✓	✗
	Error types in the elicited imitation and elicited production tasks.	Elicited Production				
		Omission	> N/A	✗	✓	✓
		Substitution in the elicited imitation				
Research Question 2	Singleton and coda cluster in singular words	Omission	> N/A	✓	✓	✓
		Substitution in the elicited production				
		Singleton coda > Coda	nose > fox	✗	✓	✓
	Singleton and coda clusters in plural words	Singleton coda > Coda	bees > ducks	✗	✓	✓
		Singular > Plural	fox > ducks	✗	✓	✓
		Singleton coda in singular and plural words	nose > bees	✓	✓	✓
	Singleton and syllabic codas in plural words	Singleton coda	bees > horses	✗	✗	✓
		Syllabic coda				
	Utterance position	Final utterance	> Smell the roses > The roses are pink	✗	✓	✓
		Medial utterance				

Research Question 3	Coda cluster and syllabic coda in plural words	Coda cluster > syllabic coda	ducks > horses	✓	✗	✓
	Segmental allomorph in singular and plural words	Singular > Plural	tep > teps	✗	✗	✓
	Syllabic allomorph in singular and plural words	Singular > Plural	giss > gisses	✗	✗	✓
	Segmental and syllabic allomorphs in plural words	Segmental > syllabic	teps > gisses	✓	✗	✓

The research predictions presented at the beginning of the study were either confirmed or invalidated by the data analysis. Table 7 presents whether the prediction is verified (✓) or invalidated (✗) in the present study (i.e., L1 Turkish) with a comparison to research on monolingual English-speaking children (i.e., L1 English) and bilingual children (i.e., L1 Mandarin). Initially, in the first research question, which presented a comparison of three tasks, namely elicited imitation, elicited production and comprehension, the comprehension task was compared with the imitation and production tasks in the first prediction. The comprehension task confirmed this prediction by having a higher accuracy ranks than the elicited imitation and elicited production tasks. On the other hand, the other prediction compared the type of error between elicited imitation and production tasks. Although it was predicted at the beginning of the study that participants would make more omission errors, the results of the study showed that substitution error type was more common in the elicited imitation task. Thus, the study prediction was not confirmed for the elicited imitation. However, in the elicited production task, participants made more omission errors, and this confirmed the prediction. What is more, both monolingual children and Turkish-English bilingual children had more accuracy in the comprehension task than in the other tasks. What differentiated the bilingual children from the monolingual children was that their observed most common error type in the elicited imitation task was errors of substitutions whereas the monolinguals omitted the morpheme more often in the same task.

Mandarin-English speaking children, on the other hand, differed from the other two groups of children in the sense that they did not show an asymmetry between the comprehension and production tasks.

Secondly, the participants had been expected to make more errors in the coda clusters, but the research results presented that they had more difficulty in the segmental codas; therefore, two of the predictions were invalidated (see the second research question). Similarly, the participants found it equally difficult to produce the singleton coda in singular words and plural words. Therefore, the research prediction was not confirmed. On the contrary, they found it easier to produce the singleton codas in singular words than the plural words as it was predicted. In terms of the syllabic codas, the participants performed higher than expected; thus, the prediction was contradicted. The elicited production task included one condition in the second research question which compared the coda clusters and syllabic coda in plural words. The participants performed as predicted producing more accurate responses in the coda cluster and the research prediction was borne out. The only category that the bilingual children in this study converged to monolingual children was higher accuracy rates in the singleton coda in singular (e.g., nose) and plural words (e.g., bees). As given in the table, the predictions were not as much consistent when a comparison of the Mandarin-English bilingual children and English-speaking children was considered.

Lastly, the comprehension task examined the allomorph complexity in three predictions in the third research question. The participants did not perform better in the singular words for both segmental and syllabic codas and this finding was not in line with the predictions. However, as predicted, the participants' comprehension rates were higher in the segmental plurals than the syllabic plurals; therefore, the prediction was confirmed. As shown in the table, Turkish-English bilingual children and English-speaking monolingual controls exhibited quite a similar pattern in the segmental and syllabic codas with number complexity. Turkish-English bilingual children's performance was similar to monolingual English-speaking children in differentiating the plural words. However, the English controls were more accurate in syllabic allomorphs (e.g., gisses) than segmental allomorphs (e.g., taps) while the participants of this study did not develop accuracy in the syllabic allomorph yet.

5.6 Conclusion

This section elaborated on the results of the study for the three research questions and their related predictions. To sum up, the first research question investigated whether there is an asymmetry in the accuracy rates among the three tasks conducted in the data collection process, namely elicited imitation, elicited production, and comprehension. To this end, all three tasks were compared in terms of accuracy, and then elicited imitation and elicited production tasks were compared in terms of the error types: omission and substitution. The second research question examined whether phonological complexity affects accuracy in the production of the plural inflectional morphology in L2 English. Therefore, different pairs of complexities that were formed in terms of coda type, number and utterance position were compared and relevant findings were presented. The third research question investigated whether the phonological complexity determined the accuracy in the comprehension of inflectional morphology in the L2 English plural. The children's comprehension of segmental and syllabic allomorphs was compared using their correct responses in the task and the findings were reported. The following chapter will include a discussion of the research results.

CHAPTER 6. DISCUSSION

6.1 Introduction

The study aimed at investigating the production and comprehension of the plural inflectional morphology by Turkish speaking child L2 learners of English within the Generative Framework. This chapter presented the discussion made based on the research findings. The section 6.2 gave the effect of phonology on the L2 learners' production of the plural inflection in English. Then, the influence of the L2 phonology on the comprehension of L2 English child learners was explained in section 6.3. It was followed by the overall discussion of the three tasks, elicited imitation, elicited production, and comprehension in section 6.4. The discussion was concluded in the last section of the chapter.

6.2 The Effect of Phonology on the Production of the L2 Plural Inflectional Morphology Acquisition

Determining the effect of phonology on the acquisition of the plural inflectional morphology is a formidable issue to investigate since even the L1 English infants may not demonstrate robust utterances of the coda clusters relying upon child's semantic, phonological, morphological, and syntactic competency (Ettlinger & Zapf, 2011; Theodore, Demuth, & Shattuck-Hufnagel, 2011). To tap into children's struggle in morphology based on phonology, first, task items that included singular and plural forms of coda clusters, then the singular and plural forms of singleton codas were compared in the study. By doing so, two coda types were tested in both singular and plural forms. Turkish speaking child participants were expected to perform better in their productions of singular words in both coda types if they had not yet developed competency in the plural inflection.

It is reported in the literature that the monolingual children whose L1 lacks coda clusters can take longer to achieve competency in the plural inflectional morphology while it can be less challenging for children with L1s that have coda clusters (Paradis, Genesee, & Crago, 2011). Since Turkish morphology does not allow the cluster coda /ks/ in word-final position, it was assumed that the Turkish speaking children would struggle to produce the coda cluster /ks/ in both singular and plural words. L1 Turkish child participants' performance in the production of coda cluster /ks/ in singular and plural words was at ceiling with accuracy rates above 90%. The results suggested that the children in this study recovered from an L1 interference on the acquisition of L2 plural inflectional morphology

in English. It can be devoted to the children's length of exposure as a facilitative factor on their improved coda production; however, it was reported in the literature that speakers of languages lacking the coda cluster /ks/ (i.e., Mandarin) still find it difficult to acquire it in a second language regardless of the length of exposure (Broselow & Xu, 2004; Hansen, 2001). Furthermore, L1 Mandarin adult participants failed to utter half of the plural task items in a similar study, which indicated that they were influenced by the constraints of their first language (Xu Rattanasone & Demuth, 2014). Therefore, Turkish children's production of the coda cluster /ks/ with ease could be attributed to the fact that the child participants had acquired the coda cluster /ks/ earlier than they acquired the singleton coda /z/.

One of the commonly reported mistakes that Turkish adults learning English as a foreign language make is deleting the plural marker on the noun when the noun is used with a numeral (Şen & Kuleli, 2017). This has long been attributed to the L1 transfer effects (Eker, 2003). Similarly, Mandarin-speaking children are reported to use the English plural marker later than English speaking children (Jia, 2003). In addition, research reports that L2 learners tend to overgeneralize the target language rules in acquiring the plural morphology just like they do while acquiring past tense morphology (Marcus, 1995). The findings of the errors of omission and overuse of plural marking back up abovementioned previous research in the field. The Turkish-speaking children made omission errors in their productions of coda clusters 75% of the time in singular words and 50% of the time in plural words. It is in line with the previous research findings that children generally tend to omit the cluster codas in their productions of the plurals (e.g., Demuth, 2014; Xu Rattanasone & Demuth, 2014).

The production of singular (e.g., nose) and plural items (e.g., bees) ending with a singleton coda was integrated to the experiment to investigate the influence of phonology on the acquisition of the plural inflectional morphology. In terms of the possible phonological constraints of Turkish, it was revealed that although Turkish morphology allows the /z/ sound in word-final position, the participants mostly altered the sound and failed to produce it accurately in plural words (accuracy rates with 60% in singular words and 29% in plural words). This failure to produce the plural coda in the word-final can be linked to different morphological features that /z/ sound represents in Turkish and English (Sebüktekin, 2017). In Turkish, the word-final /z/ is mostly used for the verbal inflections; therefore, this difference may have led the Turkish speaking young learners to perform less successfully in the singleton coda words on both singular and plural nouns.

In terms of the acquisition of the plural inflection, it can be inferred that the Turkish speaking children had not yet develop competency on how to inflect the English words in plural using the singleton codas. However, the alike performance of monolingual English-speaking children and bilingual children demonstrates that children have difficulty in acquiring the plural inflection in the singleton coda in both L1 and L2. The research findings are in line with what Xu Rattanasone and Demuth (2022) pointed out. This lends support for the Continuity Hypothesis, too (Pinker, 1984; Poeppel & Wexler, 1993). Since monolingual children follow a similar pattern in acquiring the singleton coda plurals, it can be inferred that both monolingual and bilingual children may follow a similar developmental path in the acquisition of the singleton coda in plural inflectional morphology.

Among the allomorphs of the plural marker *-s* in English, the segmental allomorphs [s], [z] occur more frequently than the syllabic allomorph [əz] in English (Davies et al., 2017). The monolingual English-speaking infants demonstrate sensitivity to the syllabic allomorph [əz] around 36 months of age (Davies, Xu Rattanasone, & Demuth, 2016). The Turkish phonology does not accommodate the sound /ə/ (Sebüktekin, 2017), therefore the syllabic plurals were expected to pose difficulty for Turkish speaking children acquiring L2 English. In light of this assumption, the segmental and syllabic plurals were compared in the scope of the elicited imitation task. Surprisingly, the children had an average success rate in their productions of the words ending with a syllabic allomorph, yet they produced more syllabic plurals than segmental plurals. They performed similarly with the monolingual English-speaking children (Xu Rattanasone & Demuth, 2022). This finding supports the previous research reporting that school-aged children speaking Turkish as their mother tongue acquire the plural inflection morphology earlier than speakers of other L1s (Chondrogianni & Marinis, 2012). On the other hand, due to L1 constraints, their Chinese-speaking peers find it difficult to acquire the plural inflection despite a long exposure time (Xu Rattanasone, et al., 2016). Therefore, the findings in this study did not provide much evidence for the negative L1 influence on the L2 acquisition of the plural inflectional morphology in English. On the other hand, their incorrect responses to the test items fell predominantly into the substitution error type. It can be interpreted that the children tended to alter the plural morpheme if it does not exist in their first language. These results are not consistent with the research prediction that the rate of omission errors would be higher if there is a mismatch between the L1 and L2. Contrary to the predictions made by the MSIH,

the children performed successfully producing the inflectional morphology despite the mismatch suggesting that the children can map the form with the function.

It was stated that the coda placement plays a great role in the accuracy of the plural inflectional morphology (Song, Sundara, & Demuth, 2009). The codas placed medially in sentences hold a more complex prosodic structure than the ones placed utterance finally because the children can plan the morpheme when it is placed finally. However, they get confused by the following word in medially placed utterances, which decreases their chance to produce the word correctly (Theodore, et. al., 2011). Monolingual English-speaking children were reported to have difficulty in producing the utterance-medial sentences at early stages of morphology acquisition (e.g., Mealings, Cox, & Demuth, 2013, Xu Rattanasone & Demuth, 2014), but it was revealed that the difficulty in the acquisition decreases when children get older and start school (Snow, 1994; Song et al., 2009). It was sought to investigate whether the utterance position affected the accuracy of the plural morphology in the interplay of L1 Turkish and L2 English. In contrast with the prediction that they would perform worse in medial-utterance sentences, the child participants performed more accurately in medial-utterance plural words than in final-utterance plural words. This finding contradicts with the results of the study conducted by Xu Rattanasone and Demuth (2022) in which both L1 Mandarin pre-schoolers acquiring L2 English and L1 English control group performed poorly producing the medially placed utterances.

The performance of the Turkish-speaking children on producing and comprehending plural morphology in this thesis can be attributed to two factors: the role of Turkish morphology and the age of the Turkish-speaking participants. First, it is common in Turkish to place the object medially in an utterance. That is Turkish allows for scrambling which diverts from English which has a strict word order. Thus, the Turkish speaking children in this study might have assumed that the plural words placed sentence finally were actions, rather than objects. The findings provide partial evidence for the MSIH since the Turkish speaking child participants were affected by the influence of their first language in producing the sentences that were more prosodically complex. Second, since the difficulty related to utterance position experienced in the acquisition of plural morphology decreases as children grow up (Song et al., 2009), the Turkish 7-year-olds in this study may have benefited from their cognitive readiness to show better performance in the task. Since the participants performed native-like, they have probably grown out of the form-function mapping

difficulties as suggested by the MSIH. To be able to test the predictions of the MSIH, further research could focus on early child second language learners younger than age seven.

Given the discussion above on the results of the elicited imitation task, it can be summarized that Turkish speaking children were on track acquiring the plural inflectional morphology in English, and they had developed competency in differentiating between the coda types. Despite the lack of corresponding sounds in their first language, the children performed native-like producing the syllabic allomorph, but their accuracy rate was relatively lower than the other complexities. The elicited imitation task mainly studied the effect of phonology on the acquisition of the plural inflectional morphology, rather than the participants' knowledge about it. To eliminate the unsolicited factors such as memorizing or simply repeating the items that may interfere with the utterance of the plural morphology, the elicited production task was performed where the participants were required to form the plural themselves.

It was reported in the literature that monolingual children can tell the difference between the singular and plural words by the age of 3 (Kouider et al., 2006). The elicited production task included plural test items in the coda cluster and syllabic coda types. It was predicted that the bilingual children would perform more successfully forming the plurals ending with the coda cluster /ks/. The assumption was made since Turkish phonology does not allow the /əz/ sound. The child L1 Turkish speaking participants demonstrated a better performance forming the plurals ending with a coda cluster. Their performance was similar to that of the L1 Mandarin speaking children (Xu Rattanasone & Demuth, 2022), but none of the L1 groups demonstrated similar productions. Recall that in the imitation task, the children's performance was better in the syllabic plurals than in the segmental plurals. Despite low accuracy, L1 Turkish children could inflect plurals with coda clusters earlier than those in the syllabic plurals. It can be linked to the fact that the less familiar sounds can be imitated with success, but productive use of the plural may require more exposure to the target language.

At this point, L1 interference can be one of the effective factors for variability in the production of the inflectional morphology in L2 English providing evidence for the MSIH. What is more, this study lends support to the work in the literature which claims full transfer from L1 and full access to the UG inventory (e.g., Schwartz & Sprouse, 1996). It was reported in the literature that bilingual pre-schoolers can repeat the words that they hear in the plural form in the elicited imitation tasks before building the actual grammatical

awareness and knowledge in the plural inflectional morphology (Xu Rattanasone & Demuth, 2022). It is apparent that the school aged L1 Turkish – L2 English bilingual children meet on the common grounds with the data from the previous research. On the other hand, the errors of the children predominantly fell into the substitution category in the overall study. Again, the higher rate in the substitution error type does not provide evidence for the MSIH. The mapping failure in the production of the inflectional morphology might have prevented the learner to reflect the morphological knowledge in the task (Slabakova, 2009).

6.3 The Effect of Phonology on the Comprehension of the L2 Plural Inflectional Morphology Acquisition

The influence of the phonological complexity on the comprehension of the plural inflectional morphology in L2 English was examined through the comprehension task. The task items included the plural words ending with the segmental [s], [z] and syllabic [əz] allomorphs of the plural marker in English. The participants heard a sentence in an audio recording which directed them to point at the correct picture. Different from the previous two tasks, novel words were used in the task items to avoid familiarity with the words. Since the participants did not articulate any words, the task did not examine the error types related to production.

It was reported in the literature that the L1 English children are able to recognize plural forms in the novel words ending with segmental plurals (around the age of 2) earlier than the syllabic plurals (around the age of 3) (Davies et al., 2020). It was sought to reveal whether the acquisition of the plural morphology was a challenge in segmental and syllabic allomorphs and the data obtained from both allomorph types was compared separately. It was reported that Turkish speaking child participants performed better in segmental and syllabic plural nouns than in the singular nouns. This finding demonstrated that they provided native-like productions in the task (Davies et al., 2020; Kouider et al., 2006; Xu Rattanasone & Demuth, 2022) giving evidence that the comprehension of the plural morphology was not a challenge for the Turkish-English bilingual school-aged children.

On the other hand, the effect of plural allomorph on the comprehension was tested by providing the participants with the segmental plurals and syllabic plurals. It was put forward by Xu Rattanasone, Davies, and Demuth (2023) that bilingual children whose native language accommodates similar inflections with the target language perform more native-like in the comprehension task while inflecting plurals. Turkish-speaking children performed

more accurately than younger English-speaking children on the same task (Xu Rattanasone & Demuth, 2022). Although Turkish phonology does not have the syllabic allomorph [əz], it accommodates a very similar sound /ɪz/ in the verbal and nominal inflections (Sebüktekin, 2017). Thus, the high performance in the comprehension of the syllabic allomorph can be devoted to the distinct features of Turkish morphology and phonology.

6.4 The Overall Task Accuracy

The overall accuracy rates in the elicited imitation, elicited production and comprehension tasks were 69%, 26%, and 73% respectively. The findings suggest that the task type plays a role in the acquisition of plural morphology. That is Turkish speaking L2 English learners did not find it difficult to imitate the plural words in English. Similarly, plurality is comprehended earlier than it is productively inflected on nouns. These findings correlate with the predictions made by the MSIH which provides evidence for an asymmetry in form and function mapping. When the error rates in the elicited imitation and elicited production tasks were examined, it was revealed that the participants made more substitution errors in the elicited imitation task, and more omission errors in the elicited production task. The participants failed to produce the plurals although they had already comprehended them. It should also be noted that it is difficult to rule out Lardiere's (2005, 2008, 2009) feature reassembly account when explaining errors of omission and substitution of the child participants in this study. However, the children in this study may have reassembled the features of number and plurality since their rate of accuracy in the comprehension task was above 70%. Still, a carefully designed experimental study could be conducted to test the extent that the specific L1 features are reassembled in L2 across ages and varying levels of proficiency in the second language.

The elicited imitation task examined the extent L1 Turkish-L2 English children would produce singular and plural morphology in English accurately. By doing so, the aim was to investigate the role of phonological complexity on the acquisition of plural inflectional morphology. The results of the imitation task presented that the child participants' performance on the task was above chance level with an accuracy rate of 69%, and their incorrect responses were predominantly due to the substitution of the plural morpheme /s/ with /əz/ with a rate of 84%.

Recall that we set out to test the three predictions related to the MSIH in the research. Overall, the predictions of the hypothesis were fulfilled partially depending on the nature of

the tasks employed. First, the L2 learners were expected to be more accurate in the comprehension task than in the production tasks. As previously stated, the participants' performance was far better in the comprehension task; therefore, this finding provided support for the MSIH. Second, the child learners in this study were expected to demonstrate more omission errors than substitution errors. Although the child participants made more substitution errors in the elicited imitation task, they mostly omitted the plural morpheme in the elicited production task. This finding provided support for the MSIH since the children apparently had difficulty in inflecting the plural words. Yet, they performed relatively better in the elicited imitation task. Last, the mismatch between the L1 Turkish and L2 English prosodic systems were expected to result in variability in L2 productions. Our findings partially supported this prediction. Turkish-speaking children had difficulties in producing the plural words ending with the singleton and syllabic codas although they produced the plural words ending with the cluster coda with a higher accuracy. What is more, it was found that they had not yet comprehended the syllabic allomorph. Therefore, overall, the findings of the study conducted on L1 Turkish-L2 English school-aged children provided limited evidence for the MSIH.

6.5 Conclusion

In sum, this chapter addressed the main findings of the study by linking them to the Missing Surface Inflection Hypothesis. The MSIH-related predictions were presented in the chapter, and it was reported whether the data provided verifying evidence for the predictions. The findings show that Turkish speaking children acquiring L2 English can imitate plural words with higher accuracy and they have developed comprehension of the plural morphology. However, they struggle to inflect the plural words with the correct coda type. Thus, Turkish speaking children may be exposed to the target language for an extended time to be able to understand and use the grammatical and lexical structure of the plural inflectional morphology.

CHAPTER 7. CONCLUSION

7.1 Summary of the Findings

One challenge in the acquisition of phonological and morphosyntactic rules by L2 learners of English learners with varying L1 backgrounds comes from differences in consonant combinations and rule formations of plural morphology (White, 2008). This thesis was structured with the aim of revealing the effects of the phonological and morphological differences on the acquisition of the plural inflection. To this aim, 30 Turkish-speaking child participants (mean age: 7;3) acquiring English as a second language were recruited, and they were applied three consecutive tasks: elicited imitation, elicited production, and comprehension. Each task tapped on a different aspect of the plural inflectional morphology. The students' responses were recorded and analysed using a professional voice analysis software, and the obtained data were analysed based on descriptive and inferential statistics. The research results findings helped us gain insight in how children acquire functional categories.

The main contribution this thesis made to the child language acquisition literature is that it was conducted with a unique study group – Turkish speaking children who were acquiring English as a second language – and the group shared homogeneous characteristics in terms of the language exposure, the native language of the family, and the instruction of formal education.

After the statistical analysis of the data, it was revealed that the Turkish speaking young L2 learners demonstrated asymmetry in their responses across the three tasks. Their better performance in the elicited imitation and elicited comprehension tasks along with their poorer performance in the elicited production task could partially be explained through the MSIH. This finding of the study indicates that the children at around the age of 7 may not be representing the features on the surface, but they may already comprehend the plural inflection in the L2.

The present research provided insight on the effect of L1 phonology in the production of the L2 plural inflection. After the test items which included number, coda, and utterance position complexity were analysed, it was seen that Turkish speaking child L2 English learners produced the coda clusters in both singular and plural words even though they had been expected to struggle with these clusters. Similarly, it was thought that the syllabic plurals would pose more difficulty than the segmental plurals to the child participants due to

the difference between the children's L1 and L2. However, the participants produced the tasks with accuracy. Therefore, the effect of L1 on L2 morphology may not have long-lasting effects on the acquisition of L2 plural inflection. On the other hand, the child participants performed better in producing more prosodically complex sentences. Target like productions in the sentence-medial utterances may not totally be attributed to mastery in the inflectional morphology, rather it could be linked to the positive transfer from the participants' first language. To conclude, child L2 English learners did not demonstrate negative transfer effects from L1 in some task complexities, but their responses had implications for the presence of L1 influence in some respects.

In terms of comprehension, the participants completed the task without difficulty and their performance was excellent. Neither the number nor the allomorph complexity decreased the accuracy rates of the participants. It can be stated that the Turkish speaking children may have already developed the comprehension of the plural inflection at the age of 7, but they cannot reflect it on the surface yet. Therefore, this discrepancy among the tasks can be attributed to the assumptions of the MSIH.

7.2 Pedagogical Implications of the Study

These findings discussed above suggest several implications for the instruction in second/foreign language classrooms. Our results highlight the necessity of understanding the morphological and phonological features of children's first language in foreign language classrooms (López & Greenfield, 2004; Saiegh-Haddad & Geva, 2008; Wang, Cheng, & Chen, 2006). The L1 influence on the second language can be observed in the students' production and comprehension in the second language (Goad & White, 2008; Uygun & Gürel, 2016); thus, the children's language competency can be limited by the features of their first language (Bliss, 2006). The possible transfers to the L2 can be eliminated if the teachers, material developers, educational designers take necessary steps towards prioritizing the differences between the linguistic systems (Jensen, Slabakova, Westergaard, & Lundquist, 2020). The plural inflectional morphology demonstrates variability among languages, so the children's errors should be handled by the educators in a constructive way.

There are certain ways to improve plural morphology acquisition in young learner classrooms. English teachers could expose students to a variety of English nouns by integrating diverse and interactive material such as word puzzles and pair work activities in which the students think aloud and share how they form the rules (Altarawneh & Hajjo,

2018). When the learners are literate in the second language, they could also be given gap-fill exercises and text-based activities in which they detect the error and correct it (Herman & Flanigan, 1995). Finally, following Harley (1993), nouns that require plural morphology in the input could be made salient to the learner who could be given explicit instruction on rule formation. In addition, learner capacity need not be overestimated. In other words, when the need arises, strategy teaching could be integrated into the tasks and activities employed in young learner classrooms.

Second, the age of the students should be given great importance by the teachers since it affects students' readiness to the grammatical structure in the second language. The age of first exposure to the language is an effective factor in determining the readiness state of the child (Mayberry, 2007; Sebastián-Gallés, Echeverría, & Bosch, 2005). The children may require longer exposure to the L2 to demonstrate competency in the inflectional morphology (Yamaguchi, 2009); therefore, the classroom setting, and the language instruction should be arranged accordingly. The children with younger ages depending on their first exposure and the length of the exposure to the L2 can manage to perform certain tasks which their older peers with less exposure may still struggle in (Paradis et al., 2017).

Furthermore, it should be noted that comprehension of the plural inflection can occur earlier than production in monolingual (Davies et al., 2020) and bilingual children (Xu Rattanasone & Demuth, 2022). More precisely, the teachers should be empowered with the knowledge that young bilingual learners may understand the use of plural inflection and what they mean, but they may still not be able to demonstrate plural inflection on words. Therefore, language teachers should understand that bilingual children may still use the plural inflection incorrectly, and that this incorrect use stems from their failure to represent the plural morpheme. Moreover, the mismatch between the L1 and L2 could result in late emergence and production of the plural morpheme which children may manifest variability due to allomorphic differences.

7.3 Recommendations for Further Research

Variability in plural morphology use has been linked to linguistic factors such as phonological context, syntactic category, or position in which the marker is uttered and to extra-linguistic factors such as speech style and the social class the learners come from (Miller & Schmitt, 2012). Even though the data presented here focused on an investigation of linguistic factors only, there is need for further research that could examine the

distributional frequencies of plurality in the language, frequencies in the input that children receive through child-directed and adult-directed speech and frequencies in extra-linguistic contexts. In addition, to gain a better understanding of the acquisition of plural morphology, children can be given different pseudo/novel words to observe how they formulate rules of plural marking in a second language. Moreover, the rule formation of younger children could be tracked down after 22 months of age, which is the time when children cognitively start to separate the notion of one vs. more than one (Slobin, 1973; Wood, Kouider & Carey 2009). In this thesis, the tasks were first piloted on Turkish-speaking 5-to-6-year-old pre-schoolers who had been learning English in the same private school that the data was gathered. These children were cognitively ready to make a distinction between plural and singular nouns. Still, they were not able to complete the tasks in this experiment probably due to lack of input in L2 English.

The research findings may shed light on cross-linguistic interference between English and other languages in which the inflectional morphology differs from English. For instance, one of the main differences between English and Turkish is countability (Bliss, 2006). While English classifies nouns as countable and uncountable, Turkish does not exhibit the same difference in the way English does. Therefore, one of the challenges that L2 English learners face in the language learning process is to identify whether the noun is countable or uncountable before the use of the plural marker (Lu & Wu, 2022; Tsang, 2017). Considering the challenges in the countability of nouns in English, it is understandable that the plural marker in English can be compelling for language learners. This issue should be given more attention in terms of understanding the difficulties of language learners and developing appropriate instructional methods. The influence of the phonological constraints on the acquisition of the L2 plural inflection (Bliss, 2006; Goad, White, & Steele, 2003) should be studied in different L1 contexts where the inflectional morphology differs greatly. The morphology acquisition can be affected by the phonology of both L1 and L2; therefore, the studies on this matter can be elaborated with participants speaking languages that are morphologically and phonologically distinct from English. The children were exposed to English at similar rates at home and outside the school in the present study. While the child participants formed a homogenous group in terms of the percentage of second language exposure, further research may include children with various rates of L2 exposure and study its effect on the second language acquisition. The study group in this research consisted of 30 Turkish speaking children. Thus, the examination of the phonological effect on

morphology acquisition needs to be expanded to larger groups of Turkish speaking young learners with various exposure durations to English as a second language.

7.4 Limitations of the Study

One limitation of this study is that the participant pool comprised 30 bilingual and bi-literate L1 Turkish-L2 English children. One of the main reasons for the small number of participants is that the data was collected from a small city in Turkey, and the private school had only two classrooms with this age group, and there would have been an age and developmental difference if the students from higher or lower grades had been involved in the research. In this case, the homogeneity of the group has been accomplished with 30 students, yet to obtain generalisable results; a larger participant pool can be recruited for further research.

Another limitation is the lack of a control group of age-matched monolingual English-speaking children. Nevertheless, the data from the English-speaking children who undertook the same stimuli was presented for comparison purposes to set the baseline for the acquisition of plural morphology in L1. Besides, the number of items used in each of the three tasks differs from one another. Therefore, it is a limitation that the tasks did not consist of the same number of items. The same responses of participants were analysed in different research questions, which creates a limitation in the data analysis part of the study. The participants might be addressed to produce the items multiple times in future research to avoid analysing the same set of data more than once.

7.5 Final Remarks

This study aimed at investigating the way Turkish child learners of English as a second language comprehend and produce the plural marker *-s* in English which poses difficulty to L2 learners due to its phonological and morphosyntactic complexity. The theoretical framework adopted for this thesis fell under the Full Transfer/Full Access Hypothesis, namely, the Missing Surface Inflection Hypothesis which suggests that the failure in the productive use of the plural inflection does not stem from the absence of the features, and it cannot be linked to the lack of matching abstract categories. For that purpose, Turkish speaking child participants were given an elicited imitation task, an elicited production task, and a comprehension task consecutively. The purpose and the significance of the research were presented in the first chapter with the research questions and predictions. The morphological and phonological differences between Turkish and English were

elaborated in the following chapter with a focus on the plural inflection marking. This chapter was prepared with the purpose of informing the reader about the plural inflectional features of both languages which differ morphophonologically. The methodology and the results were explained in chapters 4 and 5. In these chapters, three of the tasks with their test items, the data collection procedure, the coding, and analysis were followed by the results of the statistical analyses. Three research questions and relevant twelve predictions of the research handled the phonological constraints of the L2 inflectional morphology in terms of production and comprehension. The discussion chapter included a detailed interpretation of the findings with a link to the Missing Surface Inflectional Hypothesis.

Finally, conducting this experimental research has helped me to explore how children acquire the plural inflectional morphology, what parameters it is affected by, and how diverse it is across languages. I do wish that the findings will light the path for future studies on child second language acquisition, and that fellow language teachers, course designers, curriculum developers, speech pathologists, audiologists, and everyone interested in how languages are acquired will benefit from this research.

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APPENDICES

Appendix B. Demographics Questionnaire (in Turkish)

Değerli Veli,

İzmir Demokrasi Üniversitesi Sosyal Bilimler Enstitüsü İngiliz Dili Eğitimi bölümünde yürütmekte olduğumuz “İkinci Dil Öğrenen Çocuk ve Yetişkinlerde Kural Oluşumu” adlı çalışma kapsamında, çocuğunuzun İngilizceye olan ilgisi ve becerisi ile ilgili anketi doldurmanızı rica etmekteyiz.

Bu ankete ve çalışmaya katılım gönüllülük esasına bağlıdır. Aşağıdaki soruları cevaplandırmayı istediğiniz aşamada bırakabilirsiniz.

İletişim bilgilerinizi araştırmanın sonuçları hakkında sizleri bilgilendirmek için rica etmekteyiz. Zamanınız ve iş birliğiniz için teşekkür ederiz.

1. Çocuğumun yukarıda belirtilen tez çalışmasına katılmasına *izin veriyorum / izin vermiyorum.*
2. Tarih: _____
3. Elektronik posta adresiniz: _____
4. Çocuğunuzun adı soyadı: _____
5. Çocuğunuzun doğum tarihi: _____
6. Çocuğunuzda herhangi bir dil, konuşma, duyma ya da öğrenme bozukluğu var mı?
a. Evet b. Hayır
7. Annenin anadili: _____
8. Babanın anadili: _____
9. Annenin bildiği diğer diller ve dildeki yetkinliği nedir?
Diğer diller: _____
İngilizce: __Başlangıç düzeyi __Orta düzey __İleri Düzey
Diğer: __Başlangıç düzeyi __Orta düzey __İleri Düzey
10. Babanın bildiği diğer diller ve dildeki yetkinliği nedir?
Diğer diller: _____
İngilizce: __Başlangıç düzeyi __Orta düzey __İleri Düzey
Diğer: __Başlangıç düzeyi __Orta düzey __İleri Düzey
11. (Varsa) kardeş(ler)in bildiği diğer diller ve dildeki yetkinliği nedir?
Diğer diller: _____
İngilizce: __Başlangıç düzeyi __Orta düzey __İleri Düzey
Diğer: __Başlangıç düzeyi __Orta düzey __İleri Düzey
12. Annenin en son bitirdiği okul/derece: _____
13. Babanın en son bitirdiği okul/derece: _____
14. Çocuğunuz ilk defa kaç yaşında İngilizce ile tanıştı?: _____
15. Çocukla iletişim kurulduğunda kullanılan dil(ler) nelerdir? (Toplamı 100% olacak şekilde değerlendiriniz): _____
16. Türkçe: _____ (%)
17. İngilizce: _____ (%)
18. Diğer: _____ (%)

Appendix C. Demographics Questionnaire (in English)

Dear Parent,

Within the scope of the study titled "Rule Formation in Children and Adults Learning a Second Language", which we are conducting in the Department of English Language Education at Izmir Democracy University, Institute of Social Sciences, we request you to fill out the questionnaire about your child's interest and skills in English.

Participation in this survey and study is on a voluntary basis. You can stop answering the following questions at any stage you want.

We request your contact information to inform you about the results of the research. Thank you for your time and cooperation.

1. I *allow/don't* allow my child to participate in the thesis work mentioned above.

2. Date: _____

3. Your email address: _____

4. Your child's name: _____

5. Your child's date of birth: _____

6. Does your child have any language, speech, hearing or learning disabilities?

a. Yes b. No

7. Mother's native language: _____

8. Father's native language: _____

9. Other languages spoken by the mother and her proficiency in the language:

Other language(s): _____

English: ☐ Beginner ☐ Intermediate ☐ Advanced

Other: ☐ Beginner ☐ Intermediate ☐ Advanced

10. Other languages spoken by the father and his proficiency in the language:

Other language(s): _____

English: ☐ Beginner ☐ Intermediate ☐ Advanced

Other: ☐ Beginner ☐ Intermediate ☐ Advanced

11. Other language(s) spoken by the sibling(s) and their proficiency in the language:

Other language(s): _____

English: ☐ Beginner ☐ Intermediate ☐ Advanced

Other: ☐ Beginner ☐ Intermediate ☐ Advanced

12. The mother's most recent degree: _____

13. The father's most recent degree: _____

14. At what age did your child first meet English?: _____

15. What are the language(s) used when communicating with the child?

(Complete the total to 100%):

16. Turkish: _____ (☐ %)

17. English: _____ (☐ %)

18. Other: _____ (☐ %)

CURRICULUM VITAE AND LIST OF PUBLICATIONS

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Publications

Geçkin, V. & Göksoy-Buvan, A. S. (2021) Variability in the use of functional morphology at initial stages of second language acquisition. In M. Z. Çıraklı, N. Yıldız, M. Z. Ayar, N. Müftüoğlu, & T. Aydemir (Eds.), *Proceedings of the 14th IDEA Conference: Studies in English*, (pp. 37-52), Trabzon, Turkey: Karadeniz Technical University.

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